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RICHARD P. ROTHWELL, C.E., M.E., } Editors.
ROSSITER W. RAYMOND, Ph.D., }
CHARLES KIRCHHOFF, Jr., M.E., Assistant-Editor.

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Communications for Mr. RAYMOND should be addressed to ROSSITER W. RAYMOND, P.O. Box 1465, New York. Articles written by Mr. RAYMOND will be signed thus * ; and only for articles so signed is he responsible.

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DR. PERSIFOR FRAZER, of Philadelphia, has returned from his trip to Europe.

MR. C. M. ROLKER has left for Arizona. Until December 1st, he can be addressed by wire or by letter at Tombstone, Arizona.

MR. R. P. ROTHWELL has safely arrived in Europe. During his stay abroad, his London address will be 10 Portman Square, and his Paris address, 31 Boulevard Malesherbes or 4 Rue Lepelletier. Personal letters sent to his New York address will be promptly forwarded.

THE finest gold ever assayed at the United States Assay Office, New York, was recently received from the mines of the Canada Consolidated Gold Mining Company, of Ontario. Of two bars, aggregating nearly $2000, one was 992 fine ; and the other, of about $1200, was 998 fine. One small bar even ran 999. The gold was produced by chlorination from the gold-bearing arsenical sulphurets treated by this company. The assays show that from 90 to 97 per cent of the gold is obtained by this method.

THE cry of over-production is again raised in many quarters, and it would really seem as though the capacity of the market to absorb had been reached in some cases. In the iron trade, the increase of output following the long stoppage due to the strike is beginning to weigh on prices, though it will take considerable time before a cessation of work by any considerable number of mills is the result. In the steel-rail trade, one mill after the other is dropping off from double to single turn. A heavy consumption and the firm support of the lake companies alone are holding copper where it is, while lead seems to be steadily dropping, chiefly because the demand does not increase in as rapid a rate as the supply. As yet, there is no heavy accumulation of stocks, either in iron or the metals, and there is still a margin of profit for even the weaker producers at present prices. The first fact, we believe, is the most important to be taken into consideration, because it will allow the trades mentioned to tide over the time which will intervene before the ample crops of the current year have been marketed.

A SUGGESTIVE movement has been going on during the last year among the Leadville smelters, and those in other localities dependent upon Leadville for the chief supply of their ores. One by one, the original proprietors have either dropped out or have disposed of a considerable part of their interest to stock companies, retaining the management in some cases. All seem bent on carrying off a full share of the business; and as the capacity of some has been largely increased, a sharp competition has sprung up, and the charges for smelting have come down accordingly. In fact, we are informed that contracts have been taken at Leadville at less than $8 per ton, which would be very close to the actual cost. The tendency seems to be to a concentration of the smelting business near large railroad centers and nearer the fuel supplies, as against local works. This, it appears, is now working against the Leadville smelters. To the miners of that and tributary camps, this contest may, for the time being, seem a satisfactory state of affairs. In the long run, however, we fear it will tell particularly against the smaller mines in adjoining camps, and will restrict or retard their development.

Now that our own coal and iron trades are in a fairly quiescent state, after the labor agitations of the spring and summer, those and allied industries in England have been thrown into a state of excitement by the same cause. The events of the past few weeks, and the developments now going on, are likely to furnish striking evidence on the efficacy of sliding-scales and arbitration in preserving harmony between masters and men. The coal miners of a number of districts, including the South Yorkshire, the West Yorkshire, West Lancashire, Staffordshire, North Wales, and Flintshire, concluded in convention that they were not getting enough money for their work. All sorts of wild schemes, including a proposal to restrict production by abstaining from work, were seriously discussed, and the decision was finally reached that a fifteen per cent advance be asked all round, with the alternative of striking. In all but the South Yorkshire District, a compromise was effected on the basis of a ten per cent advance. In the South Yorkshire field, it was well known to the miners that the operators were not able to do better; but they urged that, if the price were advanced, increased wages could be granted. This was finally done, although rival districts were peaceably working along at old rates. It is a striking fact, well worthy of attention, that in the three largest districts, Durham, Northumberland, and South Wales, the miners did not join in the movement. In these fields, the wages are determined by a sliding-scale, and it is solely due to this that they were not also involved.

While thus in the coal trade a disastrous contest was avoided in the principal districts by sliding-scales, recent repudiation of the same method by the men is apparently getting the finished iron trade, in the two great districts, North of England and South Staffordshire, into trouble. In the spring and summer, the workmen in the mills of the Cleveland districts repudiated the scale and succeeded in forcing an increase of 12½ per cent, which was considerably more than their scale entitled them to. The mills recently have attempted to work finished iron up, notwithstanding the fact that business is quiet; success in this, of course, would have meant an equalization in the price of the product and the cost of labor. The men, however, promptly demanded an advance of 7½ per cent in the North of England District, and 10 per cent in South Staffordshire, where the previous rise had not been so great. Arbitration is to be resorted to, in order to settle these pending difficulties ; but it is satisfactory to know that there is a growing sentiment in favor of a re-establishment of a sliding-scale in both districts.

THE IRON ORE QUESTION.

We are indebted to Mr. J. WESLEY PULLMAN for a copy of his paper, read before the Tariff Commission at Philadelphia, October 14th, 1882, in behalf of the New Jersey iron ore producers. As a specimen of logical arrangement, it is not to be praised ; but we think that after due filtering, its general current may be rendered clear. In the line of sarcasm, it is still more crude. Mr. PULLMAN distinguishes for special attack Hon. A. S. HEWITT and the Editor of this JOURNAL. His notion of withering severity is to call Mr. HEWITT an "eminent authority (?)" and the JOURNAL a "MINING (?) Journal ;" and his notion of fairness is to attribute the course of the latter to "the known connection of its editorial management with one of the heaviest firms east of the Alleghanies." The latter insinuation amounts to the assertion that Mr. HEWITT, in opposing a high duty on iron ore, is influenced by his business interests against the interests of New Jersey iron ore producers—a statement which Mr. PULLMAN,

knowing its entire falsity, would not permit himself to make in any direct form. He is perfectly aware that Mr. HEWITT is not an importer of iron ores, that he is not a manufacturer of Bessemer iron, and that he is a miner and seller of New Jersey iron ores, and interested in the Bessemer mines of Lake Superior. Candor apart, it would seem that Mr. PULLMAN and his associates should take pains, out of mere policy, to avoid allusion to Mr. HEWITT'S business interests.

So far as the controversial form and method of this pamphlet are concerned, we should be justified in taking no notice of it. The author simply needs to go to school again, and learn what he has forgotten in literary style and polite manners. Nevertheless, if he has adduced, however boorishly, any facts and arguments of importance, we can easily separate these from their source, and give them the weight of which he has done so much to deprive them.

We find on examination of this paper that it consists of a mass of census statistics, showing the extent of the iron-ore mining industry, a few analyses of American ores, and a number of vague statements about the enormous extent and excellent quality of American Bessemer ore-deposits. The facts are neither new nor in all respects authoritative. For instance, the table given on page 11, of analyses of Chester iron ores, taken from a circular issued by one of the mining companies, does not represent fairly the actual results of practice with the ores of that company, since 1875. We have no wish to injure any private interests: and indeed, as the Chester ores are not now sold, so far as we know, to Bessemer manufacturers, we can not be accused of doing so. But it is well enough known in the trade that these ores are not sufficiently *and reliably* low in phosphorus to be used for ordinary Bessemer iron. What may be done with them in making pig-iron for the basic process remains to be seen; but this much is certain, no iron hitherto made from Jersey ores satisfies the requirements of that process, which are high phosphorus *and low silicon*.

But Mr. PULLMAN'S facts, if they were above all criticism, present one deplorable hiatus. They do not include the controlling fact that foreign ores are steadily dearer in the Atlantic States than native ores of the same percentage of iron. If they are cheaper to certain manufacturers, it is and must be by reason of their quality. The freight on them is equal to the whole cost of mining native ores. Mr. PULLMAN is to-day selling "Bessemer" ores from Chester County at about 7 cents per unit of iron. Foreign ores are selling at tide-water at 10 and 11 cents and upward. Why does any body buy them, unless they are better for special uses, even at the higher price? And what progress will Mr. PULLMAN make in convincing people that he understands the Bessemer manufacture better than those who are engaged in it, and who prefer foreign ores to his, even at an increased cost of nearly 50 per cent?

When Mr. HEWITT says that each ton of foreign ore imported causes the consumption of a ton of native ore, he is probably making a general tatement, not intended to be statistically precise. As an epigrammatic expression of a general principle, it is well enough. Otherwise, it is an assertion which we have never repeated and do not now defend. But when Mr. PULLMAN, cackling triumphantly over the inaccuracy of this assertion, goes on to argue that foreign ores are underselling native ores of equally good quality in our markets, he can neither be defended in rhetoric nor in morals. We remember, in our school-days, that one of the boys in the English class brought to the teacher as a sample of "hyperbole," the statement that, as he was going through the woods, he saw a tree 1,000,000 feet high. "My son," said the benevolent pedagogue, "that is not hyperbole; that is the other thing."

Mr. PULLMAN instances a mine in the Pequest range as producing pure and high-class Bessemer ore, which has for years been "used for ordinary foundry iron *because it pays better to sell or use it for that purpose than for Bessemer.*" We should think even his mind might be led to suspect something in this case which an import duty would not remove. But it is useless to point out in detail such muddled arguments as this. They are too numerous.

The whole question is in a nutshell. What do the foreign ores cost the consumer? This question Mr. PULLMAN takes pains to avoid. To answer it honestly is to expose the hollowness of his entire claim.

We principally regret this ignorant and ill-advised movement on the part of some Jersey mining companies, because it brings discredit upon all advocacy of a rational protection of industry. Nothing is more certain than the present tendency of public opinion in regard to any thing bearing the semblance of monopoly. The recent elections have been largely influenced by that fecling. The next Congress will be dominated by it. The danger is, that the reaction against a confessedly ill-adjusted tariff will go too far, and that all protected industries will be regarded as leeches on the public treasury. It is a time for concessions and rearrangements, in which the interests of invested capital shall not be recklessly sacrificed, while the burden of the tariff shall be lightened and redistributed in accordance with equity and good policy. No time could be worse chosen for the cry of "More! more!" which certain interests now raise.

We are well aware that many protectionists think that asking for what they don't need is the way to get what they do. Such philosophers have before now said to us, "We know that we can get along with less; but we must have a margin to back down on." This idea we repudiate; and we foresee that if it be pursued as the basis of political demands, it will bring disaster. Should the industries of this country be seriously injured by a too sweeping reduction of the tariff, they may thank Mr. J. WESLEY PULLMAN and his kind.

THE BATOPILAS METHOD OF BENEFICIATING NATIVE SILVER ORES BY RAW AMALGAMATION.

Written for the Engineering and Mining Journal by Francis A. Lowe, M.E.

The ores of Batopilas, Mexico, are principally native silver, highly crystallized, with more or less of silver glance, proustite, pyrargyrite, stephanite, polybasite, tetrahedrite, zinc-blende, galena, and iron, copper, and arsenical pyrites. The percentage of the arsenical, antimonial, and sulphureted compounds of silver in some mines is exceedingly small, compared with the bulk of native silver, while in others they have been found to predominate; but their percentage throughout the whole district is small compared with the bulk of the ore treated. The old method of treatment with arrastras has been entirely superseded by modern milling machinery, stamps, concentrators, pans, settlers, and retorts. The old method, however, is still used in isolated districts by parties with limited capital, as the arrastras, retorting, smelting, and cupelling furnaces can be quickly erected on the spot, favored as Mexico is by a beneficent climate and good, wholesome clay. But when economy, time, and a greater output of bullion are desired, they can only be obtained through an extensive modern plant, similar to the one which has been recently erected by the Consolidated Batopilas Silver Mining Company, of Batopilas, Mexico, under the personal direction of ex-Gov. A.R. Shepherd and his able superintendent, Walter M. Brodie, mining engineer. This company and others under the same management have erected and are erecting four complete mills of thirty and five stamps each, with all the necessary machinery in the way of Frue vanners for concentrating the low-grade native silver ores, pans and settlers for amalgamating and settling the concentrations and high-grade ores, in combination with a complete plant for retorting and smelting purposes, including roasting and shaft furnaces, and the latest improved cupelling furnaces, with movable tests. In a short time, all of these mills will be in running order, including the addition of fifteen stamps to the present completed mill of like number.

This mill is a complete concentrating and amalgamating mill, receiving its power from a double horizontal direct-acting engine of 60 horse-power, supplied with steam from two horizontal flue boilers, each of 80 horse-power. Besides the stamps, there are six Frue vanners, six Varney combination pans, with boiler-plate sides, and three settlers of like construction. The stamps weigh 750 pounds each, and the batteries are supplied with 40-mesh punched screens and Hendy's champion ore-feeders. In conjunction with the larger mill, there is a small five-stamp mill, 250 pounds each, including two pans and one settler. All the machinery, furnaces, and buildings pertaining to the same are located within the inclosure of the hacienda, 800 feet in length and 400 feet in width. About five miles from these works, on the site of the hacienda of the Descubridora mines, some 3000 feet above the Batopilas Valley, and nearly 2000 feet below the tunnel entrance, a small complete five-stamp concentrating and amalgamating mill of two Frue vanners, two pans, and one settler has been erected, including a retort and smelting outfit. This mill is similar in every respect to the others, and receives its power from a small engine and boiler. At Charcos, some sixty miles from Batopilas, a similar mill is building. The small five-stamp mill in the Hacienda San Miguel receives its power from two small turbines working under a 14-foot head, or from a small engine of ten horses, receiving its steam from two Root boilers. This, however, has been abandoned, as the power was not sufficient to run all the machinery. The two turbines have replaced all the defects of the latter.

As steam is not an economical power, fire-wood being scarce and difficult to be obtained, the time is not far distant when the power of the Batopilas River will be fully utilized: three miles will give a fall of over eighty feet, with a volume of 3000 cubic feet per minute, and a theoretical power of nearly 500 horses. This power will then be available means to push all work in the valley with energy and force, especially in the mines in working power drills. The future of Batopilas demands it. The present tramway, nearly a mile in length, and blasted out of the side of the mountains 100 feet above the level of the river at the hacienda, extended on the same level up the valley, will furnish a good basis for a mill-race.

The topography of this part of Mexico is wild and very much broken. The lofty sierra of volcanic rocks flanks on all sides a vast amphitheater, in which is located an equally rugged and remarkable outcropping of native-silver-bearing diorites, stretching as far south as Charcos, sixty miles, with a maximum width of fifteen miles. The principal country is made up of white and black diorite, locally known as white and black *panina*, and syenite. The bulk of the native silver is found in the white variety, with less in the black, and very little in the syenite. The matrix of the veins is a coarse, granular calc-spar, and a network of over 3000 veins is known to exist in the district. They vary in width from a few inches to over twenty feet, with an average northerly trend and westerly dip. The method of treatment comes under the following heads:

1. Amalgamation (raw). retorting, and smelting.
2. Concentration, amalgamation, retorting, and smelting.
3. Lixiviation, roasting, and smelting; and perhaps at a later day,
4. Roasting (chloridizing), amalgamation, retorting, and smelting, followed by lixiviation or smelting for base bullion, and cupellation.

The ores are treated in the wet way, and divided at the mill into three grades. First-class includes all ores from 500 to 7000 ounces and upward per ton; second-class, from 100 to 500 ounces per ton; third-class, all ores below 100 ounces per ton. The average mill-run of the above classes varies for first-class, between 4000 and 6000 ounces per ton; for second-class, between 100 and 500 ounces per ton: for third-class, between 10 and

50 ounces per ton. Frequently considerable ore is mined which assays between 10,000 and 20,000 ounces per ton, and over.

AMALGAMATION, RETORTING, AND SMELTING.

All first and second-class ores are treated after this method, in the wet way, in the small five-stamp mill. This mill is run by water-power. The mill is of light caliber, and suitably adapted for crushing such ores. The ore is accurately weighed and then passed through a Blake crusher, the jaws of which become frequently jammed with masses of pure silver, weighing ten pounds and more. The broken ore is then fed into the battery, and in part passes from thence through a punched 40-mesh screen to *pelas*, or pits, made of masonry, finished off in the inside. During the stamping, a guard keeps constant watch over the feeder. There are four *pelas*, or settling-vats. The battery slimes are conducted into the head or forward *pelas*, the other *pelas* receiving the overflow from the former. The two forward ones receive continually the richer slimes, and are continually emptied to supply the pans. The slimes are conducted alternately into one or the other, as one or the other is cleaned out. The overflow from the last two *pelas* is continually siphoned off into the river. The settlings in these are in the finest comminuted condition, and exceedingly slimy, assaying about 50 ounces per ton. Some four or five months are required to fill these *pelas* with such settlings. In that time, they amount only to a few tons; they will probably be treated in the pans with richer settlings.

The fact that these settlings assay as they do shows that silver is floured under the stamps, and that it can be carried some distance in the slowest-moving currents, in currents which are hardly discolored with slimes. The amount of floured silver lost in the overflow is but a few ounces, and often but a trace. This is a great gain over the old method of subjecting the ore to the slow and long grinding and pulverizing action of the arrastras, which suffered a loss of over fifty ounces, and put the slimes or tailings in such a condition that it was found impossible to save over fifty per cent on Frue vanners. There is evidently a limit when the specific gravities of the heaviest bodies become helpless and inert. This limit is reached in a Mexican arrastra, treating native silver ores. Any attempts to concenerate such tailings, in one treatment, will only in part be successful, as witnessed in the treatment of over 1000 tons of such tailings at Batopilas. In the constantly changing ore-mass under the stamps, very little silver is floured—a small amount compared with that of arrastred silver. During the stamping of the first and second-class ore, the battery is frequently hung up, in order to remove the *mass* or *battery silver*, which often clogs the stamps and endangers the screens. This silver is sifted wet through a ten-mesh sieve; the siftings are mixed with the rich battery slimes and treated in the pans. The heavy battery silver, along with the *breaker silver*, is thoroughly cleaned, by hand, of all adhering gangue, and smelted down in plumbago crucibles. The rich battery slimes, from the two forward *pelas*, are taken to pans of 1800 pounds capacity. These slimes assay from 54 to over 1000 ounces per ton. The pans were charged every twelve hours with second-class, and every twenty-four with first-class ore.

Practice has brought down the time of charging much lower since the writer was in Batopilas. The amount of mercury varies with the richness of the ore. One to two flasks is amply sufficient for each charge of second-class ore, while six to sixteen flasks have been used with rich first-class. The sifted battery silver is generally amalgamated with the first-class battery slimes in fifty-pound quantities added at different periods of the amalgamation. This mixture requires long grinding and much mercury to pulp it to the right consistency for good amalgamation. The pan amalgamation is as follows: The pans are first put in motion, eighty revolutions to the minute, with the mullers up; after putting in 100 pounds of ore, the mullers are lowered to the dies; water is then turned on and the pans fed constantly with a shovel. The charge depends upon the amount of moisture in the ore. The ore is ground until it is so fine as not to be gritty between the fingers. When the right stage of pulp consistency is reached, the mercury is added by straining it through eight-ounce duck. The consistency of the pulp should be neither too thin to hold the mercury nor so thick as not to grind well. It must be thick, but thin enough to circulate freely under the shoes and dies. With second-class ore, one flask of mercury is at first added, and more as hornspoon tests require; with more than one flask, more amalgam is thrown into the settler and saves washing. After the mercury has been added, the grinding is continued as long as hornspoon tests show traces of metallic silver. When these have disappeared, the mullers are raised and allowed to run three or four hours, to collect the fine mercury: then it is ready to run into the settler one charge at a time. Before adding the mercury, twenty pounds of salt are charged in each pan along with sifted wood-ashes, to cleanse the metallic scales of impurities; steam is let on, and during the amalgamation, sulphate of copper is added. It is doubtful whether the last assists to any great extent. The charged settlers make about fourteen revolutions per minute; revolve at a speed just sufficient to keep the pulp in a placid movement, to allow the fine amalgam to settle upon the bottom. At periods, the different plugs are pulled, the tailings running off into the *pelas* below the pans. The fourth or last plug is only pulled during a clean-up. The bottom of the settler is inclined, and as the fine amalgam settles, it runs out into a mercury pot attached to the bottom, into which it rises and flows down through a center pipe to the straining-bag; the pressure of the moving mass in the settler being sufficient to elevate the fine amalgam.

With second-class ores, a clean-up is made every month. With first-class, mixed with rich and heavy battery silver, a clean-up is made at the end of every twenty or thirty hours, depending upon the richness of the ore. With the latter ores, the amalgam becomes so thick and heavy at times as to clog and prevent the movement of the mullers, necessitating at times the use of chisels and hammers to break the hard and compact amalgam from the sides. This amalgam incrustation has exceeded three inches in thickness, and its weight varies from 600 to 1200 pounds from each charge. As fast as the amalgam is made in quantities, it is thoroughly washed in wooden *bateas* or basins, by expert washers, with elliptical shaped stones held in the hands and forced with pressure throughout the mass. This liberates the *polvillos* or base ingredients from the amalgam. The washed amalgam is weighed, strained, reweighed, and retorted. The strained amalgam is molded into small bricks, then wrapped in ordinary brown paper, and charged in the retorts in weights varying from 360 to over 600 pounds. These bricks are packed in the retorts as ordinary bricks would be packed in a barrel; the brown paper keeps the bricks separated and prevents the whole from running into a mass. After retorting, the bricks are easily separated by a slight blow from a hammer. As the silver is highly crystalline, these retorted bricks present the appearance of a mass of crystals pressed to the mold. The crystals vary in length from minute specks to beautiful ones an inch or two inches in length, flattened out in the shape of spears, cimiters, and crescents. The crude silver is then weighed and charged into plumbago crucibles, 73 pounds to each charge. Every hour a bar is run out averaging 70 pounds in weight. Borax, niter, and old bottles are used as fluxes. The ratio of silver to the mercury in the amalgam varies from 1 to 3 to 1 to 5, depending upon the size of the crystals of silver and the washing and straining of the amalgam. The crude silver from the retorts assays from 900 to 960 fine, and the bars from 980 to 990 fine. The time of retorting varies from eight to thirty-six hours; this has been entirely due to the bad quality of the fire-wood. The bars are assayed, weighed, stamped, and shipped to Chihuahua or Alamos.

With first-class ores assaying as high as 10,000 ounces per ton, the lowest loss, in one treatment, in the tailings was fourteen ounces; the highest, eighty-nine ounces. These are reworked and reduced as low as eight ounces per ton. With second-class ores, the lowest loss in the tailings in one treatment was four ounces, and the highest thirty-five ounces; this latter occurred in the early experimental days; the charge was run off too soon. The average loss now is about eight ounces per ton. First-class battery silver assays from 12,000 to 18,000 ounces per ton. Second-class from 4000 to 8000 ounces per ton. During a run, battery silver accumulates very fast. A clean-up after two days' run has exceeded 2000 pounds. Concentrated battery silver assays over 900 fine. The loss of mercury in amalgamation and retorting is about two and a half per cent; a great gain over the old slow method in arrastras, which suffered a loss as high as twenty-seven per cent of mercury, and over fifty ounces in the tailings. The present tailings are almost floured; the whole of any sample will pass through a 100-mesh sieve. The bulk of the loss in such is due to the unamalgamable nature of silver glance and the antimonial and arsenical compounds of silver. There is considerable arsenic in the silver, but no cobalt or nickel, nor are such complex ores as huntilite, animikite, and macfarlanite met with. The poorer tailings below eight ounces are used to fill in and cover adobe roofs. The richer are saved for lixiviation.

CONCENTRATION, AMALGAMATION, RETORTING, AND SMELTING.

All third-class ores from the Roncesvalles and other mines, including the separated third-class from the great piles of second-class in the mines of the San Miguel, are treated in the large mill. The minerals in the third class are native silver, the compounds of silver, blende, lead, and pyrites, varying from three to seven per cent. The number of tons concentrated into one varies from 10 to 350 tons, and the ore assays from ten to fifty ounces per ton. The concentrations assay from 190 ounces to nearly 2000 ounces per ton. The loss in the tailings from the Frue vanners varies from a trace to three ounces per ton.

The number of tons passed through the fifteen-stamp mill varies from twenty-five to sixty tons, depending upon the cohesion of the ore. The average number of tons concentrated into one at the Silver Islet mill is about forty-four, showing a percentage of mineral of two and one third. The average here will probably exceed five per cent.

These ores are concentrated upon six Frue vanners, one man in charge. As fast as the concentrations accumulate, they are amalgamated raw in the same manner as first-class ore, the time and charge of mercury depending upon their richness. The tailings, *povillos*, principally blende, lead, pyrites, traces of native silver and its compounds, assay from fifteen to twenty-five ounces per ton. These are placed aside for lixiviation. On account of the great percentage of blende in these ores, concentrating to fifty per cent and over, it was thought at first that it would be detrimental to good amalgamation, but subsequent experimental tests dissipated all doubts. The blende and galena are poor in silver, seldom exceeding two ounces; the principal loss is in unamalgamable silver compounds: but few traces of native silver are found in the tailings. The native silver or metallic scales in these ores are concentrated to nearly ninety-three per cent, and the whole amount of silver to nearly ninety-two per cent.

LIXIVIATION, ROASTING, RETORTING, AND SMELTING.

Besides the tailings from the first and second-class ores of various mines and the tailings from the concentrations after amalgamation, other rich tailings accumulate, especially those from the ores of the Descubridora mines. These ores are very rich in native silver and its compounds, proustite, stephanite, etc. After eliminating all the native silver by amalgamation, the tailings were found to be very rich, from 60 to 100 ounces. It is proposed to leach these tailings, the machinery and apparatus being now fully under way. Experimental tests made before the writer's departure were very favorable to the adoption of this method. The Kiss method with hyposulphite of lime and polysulphide of lime will probably be the process adopted. The different tailings will be leached separately. Those carrying the rich compounds of silver will be roasted with salt, leached, the precipitate re-roasted, and then run out into bars. Those rich in the base metals will require, in addition to the above, cupellation with lead.

Roasting (chloridizing), amalgamation, retorting, and smelting, followed by lixiviation of the tailings, will probably be the method used in beneficiating the rich gray copper ores of the district, though it is quite probable that direct smelting for base bullion and cupellation will be applied to all the rich gray copper and smelting ores. No steps have as yet been taken as to the adoption of either method.

It will be seen that raw amalgamation of these rich silver ores is a great success—the only rational way of treating them. Were the same ores treated by direct smelting and cupellation, the loss would probably exceed 10 per cent, whereas a 6000 ounce ore suffers only a loss of 0·23 per cent of silver. Governor Shepherd has completely revolutionized the old primitive methods of mining and beneficiation, and in the course of a few years a new era will dawn upon the famous old mining district of Batopilas. The work which has been done under his management

and his able assistant, Mr. W. M. Brodie, consists of a fine tramway of nearly a mile in length blasted out of precipitous bluffs 100 feet above the river, crossing arroyos or ravines over arches and long superstructures of masonry to the mines of the San Miguel. It is ten feet in width, with a mine tramway throughout, over which 50 tons of rock are brought down daily for the new mill. The mill-race of nearly the same length has been completely rebuilt, all sharp angles and obstructions have been removed, and the wall upon the river side increased in strength and hight. Great boulders in the river have been successfully removed to change the current during high water. A five-stamp mill, with all the necessary concentrating and amalgamating machinery, has been erected, including silver and retort-houses, roasting, smelting, and cupelling furnaces. All of this machinery was brought over from the coast, 300 miles over the most rugged and dangerous of trails, on the backs of mules. Old packers maintained that it was an impossibility to transport machinery from the coast—that the mules could not labor under the loads. Nine months after the machinery had been ordered in San Francisco from Hinckley & Spears, 300 tons had been received and erected in the hacienda. Large *pelas*, or vats of masonry, have been constructed to collect tailings, while a very large and deep one is used as a reservoir for clean water during the rainy season. A well near by has been sunk below the river, and infiltrations keep it constantly full, from which it is pumped over into the large reservoir; thence it is forced up into another large reservoir of masonry above the mill.

Great walls of masonry have plateaued off nearly one third the hight of the mountain, forming excellent room and sites for all out-houses and any extension to the mill. These retaining walls are strengthened and backed up by an immense protection-wall 800 feet in length and 8 feet in thickness at the base; 15 feet in hight and 5 wide on the top. Another inclosure or parapet wall of the same dimensions has been constructed upon the river front. Altogether, the appearance of the hacienda from the opposite side of the river is very much of the nature of a fortress. The company has now over 500 mules and burros engaged in bringing over machinery from the coast and boiler-wood from the mountains. This work is all done under contract. Ore from most of the mines is brought down in leather bags by mules: every pound is accurately weighed and the bags tared. Lime, salt, and wood are all sold by the pound; so many sticks of the latter make a cargo of 300 pounds. Heavy timber for milling purposes is cut high on the mountains and hauled down to the works by half-naked Indians, a 14-inch log losing 25 per cent in its transit. The same Indians hew planks from heavy timber, pack them down to the hacienda, receiving from fifty to seventy-five cents per plank. Until the new saw-mill was erected, the Indians supplied all such timber. Governor Shepherd is manager of nine companies—six in New York, one in Philadelphia, two in Washington, besides a syndicate to work the old mines of Charcos, Morelos, Zapoti, and Realito, sixty miles south of Batopilas. Twenty-one mines are now worked by shaft and tunnel; fourteen of the latter are under full way to tap the veins below the old workings, employing more than 800 people.

Batopilas is a true native-silver-bearing district—the home of the silver-bearing diorite, in which rock, and in no other rock as yet known, are found the great *raw* deposits of crystallized native silver. This diorite has been found silver-bearing at Silver Islet, Lake Superior; Stonewall Jackson mine, Arizona; and Bullard's Peak, New Mexico. The diorite varies in structure from a very fine, black-grained, stratified rock, poor in silver, to one very coarse, gray and bluish-gray, grain less stratified, with crystals of feldspar prominent. It is in the latter variety the bulk of silver is found, accompanied by a very coarse-grained white calc-spar and a very fine-grained pink spar. The latter spar predominates in the Silver Islet mine. Authentic records show that Arizona, known to the early Spaniards as Arizuma, has produced the largest masses of native silver in the world. One piece weighed over 2000 pounds, while other pieces have ranged from 50 to 300 pounds in weight. These are believed to have come from the district north of Globe City. Batopilas is situated in the extreme southwestern part of the State of Chihuahua, distant 300 miles from the city of Chihuahua, and 300 miles from the Gulf of California.

I append the following as the mill-runs of ores from three different mines at different periods:

First-class San Miguel rich battery slimes. Ounces.	Second-class San Miguel battery slimes. Ounces.
448	68
393	108
293	126
445	54
Average. 386	Average . 89

First-class San Miguel battery silver. Ounces.	Second-class San Miguel battery silver. Ounces.
16,673	4,446
15,370	6,315
12,214	8,580
16,668	4,146
Average.. 15,231	Average.... 5,872

First-class San Miguel tailings. First treatment. Ounces.	Second-class San Miguel tailings. Ounces.
67	9
36	12
24	16
14	4
Average 35	Average..... 10

First-class Roncesvalles rich battery slimes. Ounces.	Second-class Roncesvalles battery slimes. Ounces.
433	190
439	142
530	176
681	190
Average.....516	Average..... 174

First-class Roncesvalles battery silver. Ounces.	Second-class Roncesvalles battery silver. Ounces.
16,743	6,031
15,716	7,114
17,814	7,318
18,511	7,413
Average.....17,196	Average.... 6,969

First-class Roncesvalles tailings. First treatment. Ounces.	Second-class Roncesvalles tailings. First treatment. Ounces.
59	12
73	15
81	23
89	26
Average..... 75	Average..... 19

First-class Camuchin rich battery slimes. Ounces.	First-class Descubridora rich battery slimes. Ounces.
309	296
1,067	
Average..... 688	

First-class Camuchin battery silver. Ounces.	First-class Descubridora battery silver. Ounces.
10,899	2,257
13,074	
Average... 11,986	

First-class Camuchin tailings. First treatment. Ounces.	First-class Descubridora tailings. First treatment. Ounces.
10	60
64	
Average..... 37	

All tailings above 10 ounces per ton are worked over again in the pans, or will be lixiviated. The variations noticed in the assays of rich slimes and battery silver are due to the structure of the ore treated. When the silver is disseminated throughout the gangue in small crystals, the slimes become richer and the battery silver poorer, and *vice versa*.

OFFICIAL STATEMENTS AND REPORTS.

CHRYSOLITE SILVER-MINING COMPANY, LEADVILLE, COLORADO.

We have in a former issue given a brief abstract of the financial condition of this company, and need only add now that Mr. Henry C. Cooper, Treasurer, has since made up the October statement, according to which the expenses for that month are $21,644.37, of which $15,000 were paid in New York by draft from Leadville, leaving the balance on hand November 1st at New York, $200,694.80, and at Leadville, $4239.58, a total of cash on hand, October 31st, of $204,934.38. The report by the president, Dr. R. W. Raymond, to the trustees, reviews the work of the year. After speaking of the causes leading to the abandonment of the attempt to prospect the second layer through the Roberts shaft, Dr. Raymond says: "The exploration of the second layer will now be made by incline in the layer itself, from Colorado Chief shaft No. 2, a plan which will be cheaper, though not in all respects as satisfactory, as the one first adopted. It may still be advisable, should ore-bodies of value be discovered in this layer, to open them by vertical shafts instead of working through a long incline. The area southwest of present workings will be explored, so far as indications may justify, from the shaft just mentioned. The large area north and northwest of the present mine has been explored, during the year, only by the advancing drifts of the mine itself. The long north drift near the Little Chief ground, extending some 350 feet beyond the ore-body, through barren ground, has cut within the past few days a layer of iron, assaying thirteen ounces per ton in silver and no lead. The significance of this discovery can not now be determined. It is encouraging, as indicating the possibility of a new trough of ore in that ground. Other indications on Fryer Hill have led to the hope that such a trough or line of ore-bodies existed; but the danger is, that the glacial erosion, which is deeper there than it is to the south, may have cut away once existing ore-bodies."

Mr. R. Neilson Clark, the general manager, refers at length to the cessation of work at the Roberts shaft, and speaks of the leasing of the burnt district at the expense and risk of the lessee, who we are informed is Mr. J. W. Marden, the former financial agent of the company. Mr. Clark then speaks to the concentrating of low-grade ores, a subject on which so many exaggerated statements have gone forth, as follows:

"Carrying out the system of work inaugurated during the previous year, the dumps containing waste ore have been worked by lease. The profit accruing this year has amounted to $43,204.99. This system of lease working was begun with the expectation that but a small amount of valuable ore was obtainable. But since the initiation of leasing, the dumps have yielded a total of over 6000 tons of ore, sold for about $118,000, of which, on the settlement with the lessors, the company has received, so far, an average of about 45 per cent net. The attention of the management was called to the probable profit made by the lessors. One statement only could be obtained from them. This was made by a reliable and accurate man. The amount of cash received in gross was $9044.61. On this lot his profit was $2839.40. A large amount of this ore was screened, and the screenings concentrated by 'hutching.' The loss of silver was found to be very great. Correct surveys have been made by the surveyor of all our dumps. The details are here omitted. In substance, they show that 46,000 cubic yards of material are available; this material will yield 47,500 tons of ore, which is already mined and ready to be treated. To this amount must be added the large tonnage obtained daily while working on the edges of the old ore-bodies. It became necessary to erect a mill, in which experiments should be conducted, so that some system of work should be decided upon from which an income could be obtained. An old smelting-works was obtained, free of cost, in which stood a sufficiently large engine and boiler. A 300-pound stamp-mill, with sizer, two percussion-tables, and Frue vanner, were put in place. Owing to preliminary troubles in adjusting the faces of the percussion-table, the experiment so far has not been thoroughly

successful. All of the pulp made by the stamps has had to be thrown on the vanners, and that without sizing. The result has not therefore been successful, so far as product is concerned. The possibilities of success have, however, been assured by this trial run. It is expected that the complete mill will be in operation by the 15th of November. While there is now good reason to expect a successful result from this operation, it would be useless to give estimates at present, either of the value of the dumps or the cost and profit of their treatment. Nothing but the actual running of the experimental works, permitting sample assays of ore, concentrates, and tailings in large quantities, will give the needed light on these points.

"In the mine itself, the only considerable body of ore now worked or known is that in the northwest corner of the workings (extending into I 36 on the map). This has held out much longer than was anticipated, having shown a thickness of over 20 feet in many places. Judging by analogy, it must, before long, in going west, reach the glacial 'wash,' and end there. To the north it may extend farther. The ore is siliceous, much mixed with iron, low in silver, and almost without lead."

BODIE CONSOLIDATED MINING COMPANY, BODIE, CALIFORNIA.

The third annual report of this company, which is before us, is an admirably arranged and detailed record of the work done during the year ended May 31st, 1882. The report of the superintendent, Mr. H. A. Whiting, is accompanied with a number of plates showing a plan and a number of sections. Without these, it would be a difficult matter to explain satisfactorily what amount of work has been done in a vein formation which is quite complicated. Mr. Whiting gives a statement concerning the relations of the Fortuna, the main vein, and a rich smaller vein running down from the former. It does not fault the Fortuna, but simply drops from its foot-wall, somewhat abruptly, leaving the main vein barren, while it is itself richly mineralized. A cross-cut is driving from the 780-foot level to meet it. The Lent shaft, which was sunk 320 feet during the year, at a depth of 651 feet struck the junction of the Fortuna vein and a wide brecciated vein faulting it, causing the largest throw along the Fortuna vein ever yet encountered. There are many points in the report of interest to the engineer, to whom we must, however, refer it. Mr. Whiting presents a very elaborate statement of expenditures, and has added a series of tables giving in detail the items entering into cost of hoisting ore and rock, stoping, drifting, cross-cutting, sinking, uprising, sorting, and general mining expenses. To this he adds the cost of milling, retorting, and melting, assaying, and general mill expenses. He gives the total amounts, the rate per ton of ore, and the rate per ton of ore and waste. We tabulate the latter, based upon the quantity of ore and waste hoisted.

HOISTING EXPENSES.

Items.	Rate per ton ore.	Rate per ton ore and waste.
Labor—engine, car-men, windlass-men, etc.	$6.329	$2.260
Fuel—wood	2.643	0.943
Lights, etc	0.296	0.106
Lubricating oils, etc.	0.108	0.039
Ore-sacks	0.096	0.034
Packing, cotton waste	0.026	0.009
Drinking-water	0.008	0.003
Canvas, rope, etc.	0.015	0.005
Repairs:		
Miscellaneous	0.015	0.005
Iron, steel, tools, nails, pipe, fittings, etc.	0.067	0.024
Labor—carpenter, blacksmith	0.427	0.153
Lumber	0.023	0.008
Coal	0.005	0.002
Miscellaneous	0.033	0.012
	$10.091	$3.603
Total expenditure	$50,014.77	

MINING EXPENSES.

	Stoping.		Drifting.	Cross-cutting.	Sinking winzes.	Uprising.
	Rate p.t. ore.	Rate p. t. rock.	Per running foot.	Per running foot.	Per running foot.	Per running foot.
Labor	$0.438	$3.371	$7.188	$9.623	$17.720	$9.663
Powder, fuse, caps	0.851	.304	0.642	.772	1.558	.720
Candles	.235	.084	.178	.237	.426	.269
Track iron, plates	.....	.....	.099	.106	.....	.....
Spikes, nails, etc	.....	.....	.....	.....	.....	.....
Miscellaneous	.025	.009	.063	.024	.051	.012
Wear and tear tools:						
Labor—blacksmiths, etc.	1.016	.363	.777	1.045	1.837	1.055
Charcoal	.131	.047	.097	0.112	.229	.095
Drills, picks, shovels, etc.	.095	.034	.082	0.090	.137	.083
Timbering:						
Labor	.262	.094	.113	0.078	.114	.508
Timber and lumber	.324	.116	1.214	0.682	.229	1.052
Cost per running foot			$10.453	$12.789	$22.301	$13.457
Rate per ton ore	$12.377		3.484	1.935	1.994	1.092
Rate per ton ore and waste	4.422		1.245	0.693	.712	.389
Total expenditure	61,341.88		17,271.06	9,588.24	9,879.42	5,409.96
Total number of feet			1,652	751	443	402

These figures clearly show how expensive, comparatively, the sinking of winzes is, and they prove how much more costly, particularly in labor, the timbering of uprises is, compared with the same work in drifts, cross-cuts, and winzes. The following is Mr. Whiting's *résumé* of mining cost:

	Per ton of ore.	Per ton of rock.
Cost of hoisting	$10.091	$3.603
" " stoping	12.377	4.422
" " ore-sorting	.256	.091
" " exploration and dead-work	8.505	3.039
" " general expenses	1.387	.493
Total cost	$32.616	$11.648

The pumping expenses are not included in this because they are borne jointly, like those of the Lent shaft, by the Bodie and Mono companies.

The cost of milling is given by Mr. Whiting as follows, per ton of ore treated:

MILLING EXPENSES.

Labor	$3.384	*Pan wear and tear:*	
Fuel	2.004	Mullers, drivers, etc.	$0.087
Quicksilver	0.628	Agitator and settler shoes	0.006
Bluestone	0.430	Lightning	0.090
Salt	0.198	Lubricating and packing	0.076
Acids	0.095	Boiler preparation	0.036
Potassium, cyanide, and sodium	0.013	Shovels, etc.	0.025
Battery wear and tear:		*Repairs:*	
Shoes and dies	0.078	Labor	0.133
Screens	0.061	Timber and lumber	0.071
Stems, bosses, tappets, and canes	0.053	Belting, hose, etc	0.051
Pan wear and tear:		Foundry wire	0.030
Shoes and dies	0.264	Fittings, solder, nails, charcoal, etc.	0.058
Total per ton			$7.871

The following is a *résumé* of the cost of milling:

	Per ton.
Milling	$7.875
Retorting and melting	0.135
Assaying	0.171
General and office expenses	0.861
	$9.038
Hauling to mill	1.360

The quantity of quicksilver used was 1·52 pounds per ton. The bullion produced was 938 fine, containing 96·1 thousandths of gold, and 841·9 thousandths of silver. The cost given does not include legal expenses, freight on bullion, discount on bullion, cost of Lent shaft, etc.

In conclusion, Mr. Whiting gives the following interesting

STATISTICS OF ORE TREATMENT.

	Ozs. Gold.	Ozs. Silver.	Ozs. Total.	Gold. Value.	Silver. Value.	Total value.
Average assay value of pulp per ton	1·89	24·00	25·89	$39.11	$31.03	$70.14
Average assay value of tailings per ton.	·11	5·80	5·91	2.28	7.50	9.78
Average yield from pulp	1·78	18·20	19·98	36.83	23.53	60.36
Average yield from battery sands, per ton ore	·38	·74	1·12	7.90	.97	8.87
Average entire yield, per ton ore	2·16	18·94	21·10	44.73	24.50	69.23
Total average value of ore per ton	2·27	24·74	27·01	47.01	32.00	79.01
Per cent extracted in pans	94·17	75·83	86·06	.....	.....	.....
Per cent extracted in pans and battery.	95·15	76·56	87·62	.....	.....	.....

Length of mill campaign	357 days.
Average daily crushing	16·4 tons.
Average daily crushing, per stamp-head	1·64 tons.

According to the cash statement by the secretary, Mr. W. H. Lent, the company had on hand June 19th, 1882, $84,067.32, against $28,031.26 on June 6th, 1881. The receipts include $413,154.39 for bullion, $50,000 by assessment, while the heaviest items outside of current expenditures are $15,000 for additional property, $94,240.16 for the Lent shaft, and $14,504.09 for legal expenses.

THE EARLY USE OF COAL IN ENGLAND.

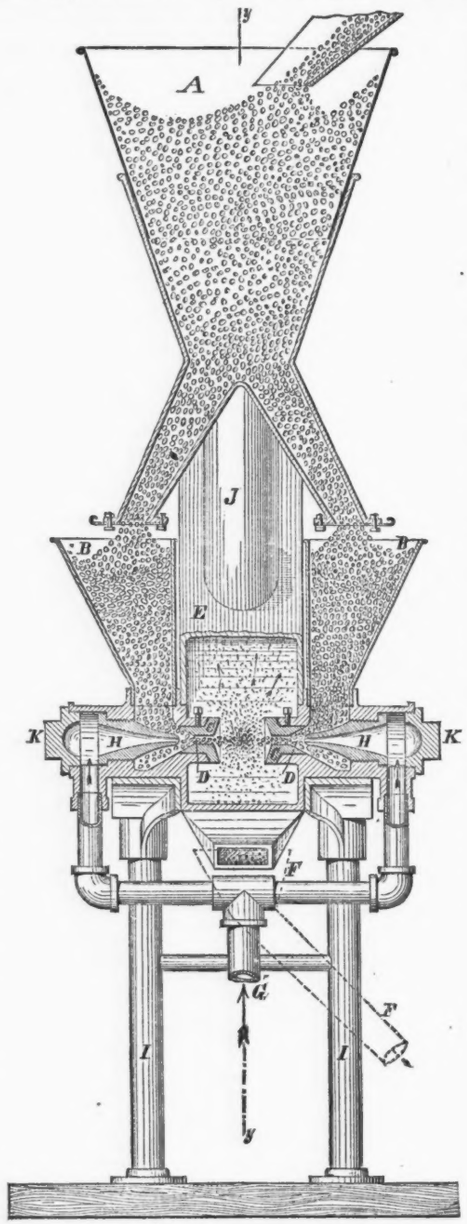
About the beginning of the thirteenth century, much objection was raised against the introduction of coal into London on the plea that its smoke was an intolerable nuisance. This opposition was continued for nearly two hundred years in some quarters, but was at last obliged to give way before the growing scarcity of timber. Toward the beginning of the fourteenth century, many shallow collieries were opened out in the neighborhood of Newcastle-on-Tyne, but little is known about the progress of the use of coal during the course of the fifteenth century. There is enough to show, however, that the demand for coal went on increasing. In a petition presented to the council by the Company of Brewers in 1578, we find that corporation offering to use wood only in the neighborhood of Westminster Palace, as they understand that the queen findeth "hersealfe greatley greved and anoyed with the taste and smoke of the sea cooles." Another author writing in 1631 says that "within thirty years last the nice dames of London would not come into any house or room when sea coals were burned, nor willingly eat of the meat that was either sod or roasted with sea-coal fire." Soon after the commencement of the seventeenth century, the use of coal for domestic purposes, as well as for washing, brewing, dyeing, etc., was general and complete. The mines were still shallow, and they were drained by means of horizontal tunnels called adits, water-gates, etc. Already attempts had been made to sink some of them under the water-level and to raise the water by machinery. In the year 1486–87, the monks of Finchdale Priory expended a sum of money at one of their colleries on the Wear "on the new ordinance of the pump," and on the purchase of horses to work it. Underground fires and noxious gases began also to appear about this time. The miners' tools consisted of a pick, a hammer, a wedge, and a wooden shovel. The coal was raised to the surface in some cases by means of a windlass; in others, as in the mines of the east of Scotland, it was carried up-stairs on the backs of women called coal-bearers. In the year 1615, the fleet of vessels called the coal fleet, which carried the produce of the northern collieries—one half to London, the remainder to other destinations—numbered 400 sail. Many foreign vessels also, especially French, carried away cargoes of coal to their respective countries. Twenty years later, the coal fleet had increased to 600 or 700 sail, and was already regarded as "a great nursery of seamen."

RUBBER packing may be made steam and air tight by being brushed over with a solution of powdered resin in ten times its weight of strong water of ammonia. At first this solution is a viscid, sticky mass, which, however, after three or four weeks becomes thinner and fit for use. The liquid sticks easily to rubber, as well as to wood and metal. It hardens as soon as the ammonia evaporates, and becomes perfectly impervious to liquids.

THE PNEUMATIC PULVERIZER.

After quite a long period of experimental work, a pulverizer which possesses striking features has been reduced to a practical form. Our accompanying illustration will serve to explain the principles of its construction, which are certainly simple; and from our examination of it when working at the establishment of the Pneumatic Pulverizer Company, in this city, we believe that it has unusual merit. Briefly, the action of the pulverizer depends upon the attrition of the particles of material to be reduced to powder produced by two currents of it being hurled against one another. The particles are thus made to act upon one another, and so the great cause of trouble in stamps and pulverizers of all kinds, with but one exception, the exposure of important parts of the machinery to constant wear, is done away with. It is a principle which we believe is more and more recognized as an important one, that it is best to allow rock to grind rock, instead of causing attrition by the grinding action of rock upon some hard metal surface. In the pneumatic pulverizer, the action is as follows: The rock or ore, presumably reduced to ½-inch size by a crusher and a pair of rolls, is fed into the hopper *A*, from which it is distributed into two smaller hoppers below it *B B*, one being on each side of the machine. Simultaneously high-pressure superheated steam flows from the main pipe *G* through two branches into the nozzles *H, H*, and partially enters the tubes *C, C*. The steam flowing from these nozzles creates a suction (ten to twelve and a half inches have been observed) which draws the rock into the tube, and steam and rock issue in a steady current from the mouth of the tubes *C, C*, which are placed three and a half inches apart and are very carefully placed in a line. The two currents, meeting with great force, cause the rock to be pulverized and the powder to be carried off by the hot current of steam through the pipe *E*, while the coarser stuff is taken through *F* to an elevator to be screened. Plugs *K* permit of easy access to the nozzles, and a door in the casing of the machine makes it possible to get readily at the tubes *C. C*. The steam is generated in a Schutte & Goehring sectional boiler, in which it is also superheated to about 800° Fahr. The pressure varies, of course, according to the character of the rock. When pulverizing marble at the time of our visit, it was 150 pounds at the machines. We are informed that for quartz it ranges between 160 and 180 pounds per square inch. The only parts liable to wear are the tubes *C, C*, the action of the machine tending to enlarge the orifice gradually. When in a true line, and this is carefully provided for, the flanges of these tubes are little affected, and they serve really only to protect against stray particles. We have examined worn tubes and the interior of the machine, and have found few evidences of wear. These tubes are rough castings of ordinary cast-iron, weighing about three quarters of a pound each. We are informed that for quartz they wear out at the rate of one pair per 5 to 7 tons of rock crushed, and for marble per 20 to 30 tons. When the machine is started, it is first heated up by passing steam through it, allowing it to escape through the exhaust-pipe *J*, specially provided for that purpose. Two machines are used to do the work of pulverizing, the first working on ¼-inch material and reducing down to 60-inch mesh, through which from one third to one half is bolted. The larger material from the first machine goes to a second one, to which any coarse material is also returned. A very important advantage of this pulverizer is, that it works dry and without creating dust except in the elevating machinery. We have entered the dust-chambers when working on marble, and have found them dry and the material hot. It appears, too, that the action of the superheated steam and of the heat generated by the attrition has some beneficial effect on sulphuret ores. As to the capacity of two machines, working with ¼-inch material, we are informed that they can pulverize from 1½ to 2 tons of marble, and about ¾ ton of quartz per hour, the consumption of fuel being 125 pounds of anthracite fuel per hour. The machines themselves are small and light, and readily got at. They weigh about 400 pounds each in small pieces. The boiler weighs 10,000 pounds, the heaviest parts being the mud and steam-drums, weighing 175 pounds. With pulleys and pipe connections, the entire plant is estimated to weigh 12,450 pounds.

The most important field for this crusher is, of course, dry crushing of gold and silver ores. Where fuel is expensive, but water-power available, it is suggested that compressed air be substituted for steam, although, of course, provision would have to be made in such a case for the condensation of the moisture in the compressed air, in order to avoid troublesome formation of ice and water at the nozzles.



THE coal strike that has been declared in the Mahoning and Tuscarawas Valley bids fair to be long and determined.

NOTES ON THE OSCURA COPPER-FIELDS, AND OTHER MINES IN NEW MEXICO.

Written for the Engineering and Mining Journal by Dr. E. D. Peters, M.E., Consulting Metallurgist Vermont Copper Company.

In an interesting series of papers by Professor Silliman, lately published in the columns of the ENGINEERING AND MINING JOURNAL, mention has been made of the Oscura copper-beds. As want of time prevented Professor Silliman from visiting these deposits personally, and as they possess points of unusual interest to both the geologist and the mining engineer, I am tempted to describe them a little more fully, feeling that a residence of six weeks in that region, during which time I was engaged in prospecting these beds in the interest of an Eastern mining company, has given me a more intimate knowledge of the district than is perhaps possessed by any other person. I shall forbear mentioning names of either mines or owners in this report, and thus shall feel at liberty to comment more freely on what I saw, both in the Oscura Mountains, and subsequently in the Bonito and Nogal districts, on the western slope of the White Mountains.

The journey from Socorro to the Oscura range, in winter, by no means partakes of the nature of a pleasure-trip. A daily stage-line runs from Socorro to White Oaks, a distance of about one hundred miles; and at a point some sixty miles from Socorro, branches off the cañon that leads to the districts now pretty well known under the name of the Oscura Copper-Fields.

A sixty-mile stage drive, to one accustomed to western traveling, presents no particular hardships; but as in this case, the stage consisted of a rickety buck-board, and the team of a pair of ancient mules, the trip was exceedingly cold and tedious.

We left the town of Socorro about eleven in the morning, and skirting the Rio Grande for some three miles, crossed the quicksands of this treacherous and ever-changing river by swimming the mules across, while the wagon and solitary passenger were ferried over on a species of raft, attached to a strong rope which spanned the stream, and fastened in such a manner that the bows of the raft pointed diagonally up-stream, and the raft was thus rapidly forced across by the action of the powerful current.

The horns of several oxen protruding from the quicksands in various places showed the danger attendant on crossing this river with heavily-loaded wagons, and should serve as a warning to the merchants of Socorro that, if they desire to retain the trade of White Oaks, and other important mining camps on the eastern bank of the Rio Grande, they should take some action toward rendering the passage of this stream safer and more expeditious.

A long and tedious pull through the sand-hills on the eastern shore brought us to a cañon some ten miles in length, and cutting deeply through stratified rocks, apparently dolomitic limestones and sandstones of the Carboniferous period.

About five miles beyond the cañon, we reached the station of Prairie Springs, where a vicious-looking Mexican keeps jealous watch over a wretched solution of sulphate of soda, which he calls *agua pura*, and sells at five cents a bucket; and then, with a pair of fresh mules before us, we actually started at a trot on the second stage of our journey.

This lay over a sandy plain, covered with scanty cactus, soap-weed, and Spanish bayonet, and forming the northern extremity of the celebrated desert so well known to all New Mexican freighters under the name of the *Jornado del Muerte*.

Far in the east, the dark lines of the Oscuras stretched across our path, and it was well toward dusk when our tired mules pulled us out of the sand into the little cañon which forms an easy pass over this range. About midnight, my silent companion nudged me vigorously with his whip-handle, and, warning me that my journey was completed, assisted me to untie my horse from the tail-board of the wagon, and, without a word of leave-taking, vanished in the darkness. A fallen cedar supplied the materials for a camp-fire, and with a plentiful supply of canned provisions, and a huge roll of robes and blankets, I passed a very comfortable night on the ground, in spite of the chattering of the coyotes and the sharpness of the mountain air. In the morning, following explicit directions that I had received in Socorro, a ride of about fifteen miles brought me to the camp of the gentleman I had come to visit, and who was already expecting me. The result of this visit was the formation of such a favorable opinion in regard to the value of the deposits that I shortly returned with a party of some fifteen miners, and spent six weeks in more thoroughly examining a portion of the seventy claims which were already recorded and controlled by one person.

The Oscura range is a low, detached mountain chain, some fifteen miles in width and fifty in length, being a continuation of the Gallinas

Mountains on the north, and of the San Andreas on the south, separated from the latter by an isolated peak, known as the Little Burro. Its eastern slopes are covered with dense forests of piñon and cedar, and in the neighborhood of the copper district which forms its chief attraction are two springs of inestimable value in this arid region, capable of sustaining a population of perhaps two hundred men, with the ordinary complement of animals. Deer and bear are plenty, and it has been with much reluctance that the Mescalara Apaches have yielded their favorite hunting-grounds to the dominant race. At the present time, I am informed that all fear of annoyance from the Indians is over; but during my sojourn, although we were not molested, we had every reason to adopt the greatest precautions, and just before my party entered the district, an Indian scare had entirely driven out the very scanty population already settled there.

For a distance of at least twelve miles north and south on the eastern slope of the Oscuras, the Permian formation, overlying the Carboniferous, occurs with its most marked characteristics. Immense hills of red marl; huge beds of gypsum with subterranean cavities of unknown depth, into which stones rolled from the surface crash and thunder for a great distance; red sandstones, dolomites, and above all, quartzose and granitic conglomerates, make up a most interesting and characteristic formation, which, to the best of my judgment, will exceed 1200 feet in thickness.

The granitic conglomerate is to the miner the most important of all these rocks, as immediately below this is found the principal seam of copper ore. Still deeper, and at the contact of the granitic and quartzose conglomerates, are found four other seams of ore, of less thickness and value. My remarks will be principally confined to the upper layer. It has the same dip as nearly the whole formation already referred to—35 degrees south—and is by no means distinct from the conglomerate that forms its roof. In fact, in most cases, it is only a certain portion of this conglomerate layer, with a fraction of its mineral constituents changed into copper glance of a high grade; my own assays showing 76 per cent of copper, with seven ounces of silver and half an ounce of gold. In many cases, the feldspar is replaced by copper glance or melaconite; in others, the mica is transformed in the same curious manner. Underneath this layer of cupriferous conglomerate, which has an average width of twelve inches, appears in many of the discovery-holes a layer of soft, decomposed argillaceous slate, filled with petrifactions of pure copper glance. The principal petrifacts are of trunks, limbs, and leaves of the same species of palm that occurs in the Nacimiento copper quarries—the *Podozamites crassifolia*—(Professor Newberry); but these palms are of a smaller growth than those at Nacimiento, and the petrifacts will not average more than half the size of the latter—perhaps two ounces each. Besides these petrified palms, are found in two of the claims that I tunneled upon various shell petrifactions, two of which I easily recognized as mollusks. One interesting point was brought to view by subsequent laboratory work. On comparing petrifacts of palms with those of shells from the same claim, the palms were always found much richer in copper; being, as a rule, nearly pure copper glance, while the copper that replaced the shells was in the shape of erubescite and melaconite, and from 15 to 30 per cent poorer. On the other hand, it contained about twice as much gold and silver as the richer copper glance ore.

Some half-dozen of the most promising of these claims were prospected by open cuts, until a sufficiently stable roof was obtained for tunneling, and then were followed for from thirty to sixty feet under ground.

The result of these explorations was tolerably satisfactory, and proved that, although subject to great fluctuations as to size and value, these layers are continuous in depth, and can be tunneled upon and worked at a very small cost, the rock being sufficiently soft to admit of rapid progress with little blasting. In several instances, the ore was lost entirely, the crevice being filled with a soft red marl; but on penetrating this a few feet, the petrifacts reappeared in most instances.

The result of my explorations, summed up in a few words, may be stated as follows:

That, owing to the high price of labor and supplies, the deposits could not be worked to a profit until the district was rendered accessible by the construction of roads and the influx of a larger laboring population.

That, although a considerable amount of rich petrifacts can be picked by hand from the ore, the main reliance must be placed on the larger bodies of low-grade ore, which can only be profitably worked by mechanical concentration on a large scale; the great difference in specific gravity between the copper glance and its gangue-rock—principally marl and conglomerate—rendering this method of treatment perfectly feasible.

That, owing to the scarcity of water, profitable concentration would be impracticable until the construction of a narrow-gauge railroad from the mines to the nearest water, which may be found in the shape of some very strong springs at the northern extremity of the San Andreas range, about fifteen miles from the mines, and over a level piece of country.

That the product of this mechanical concentration will be an impure sulphide of copper, which, by a simple fusion with some of the cupriferous hematites of the San Andreas, will yield a matte of about 75 per cent, which can be brought at once to blister copper by an oxidizing fusion in a reverberatory.

That the copper from this ore will be of good quality, as no arsenic or antimony is discoverable by repeated tests.

That, owing to the high percentage of the ore in copper, the gold and silver will not pay for extraction, as a ton of white metal (75 per cent copper) will not contain over twelve ounces in silver and three quarters of an ounce of gold.

That coking coal, fire-clay, and all necessary fluxes are in the immediate neighborhood of the point indicated as most eligible for the construction of a concentrating mill.

I am inclined to think that, at the present price of copper, a profitable business might be established, if these suggestions should be carried out. Any attempt to depend upon the high-grade ores entirely, or to smelt at the mines, would certainly result disastrously, as, aside from all other considerations, the ores are highly siliceous, and there are no proper fluxes in the neighborhood.

Of much less importance than these copper deposits are several strong fissure-veins, accompanying eruptive dikes of trap, and cutting across the strata for more than a mile. The gangue-rock is heavy-spar—a most unwelcome visitor—and the ore is a low-grade argentiferous galena, scattered sparsely through a wide crevice. Old Spanish workings of considerable extent show that at one time pockets of ore of greater value must have existed; but on the whole, the present outlook is not a tempting one, and several miners who are engaged in sinking shafts on two or more of these veins are to be commended rather for the preseverance they are displaying under depressing circumstances than for their judgment in the selection of a mine.

Remounting the buck-board at midnight, a gentle down-grade of twelve miles, as it passes the outlet of the Oscura District, brings us to the edge of the celebrated Mal Pais which, if the moon favors us, can be seen black and threatening for many miles before it is reached. A more ugly and dangerous bit of traveling can not well be imagined than across this lava-bed. Vomited forth from a low mound some fifteen miles to the northward, this black stream of lava, from two to twelve miles in breadth, has pushed along its viscous mass, cooling on the front and sides as it proceeded, and curling over, broken into the most fantastic shapes by the tremendous impelling force in its rear, for a distance of fifty miles, parallel to the Oscura range, and has terminated in low mounds of volcanic sand, from which issues a large stream of water, acrid and nauseous, and soon burying itself in the thirsty soil.

Until a few months since, this lava-stream formed an insurmountable barrier to all teams, and even to a dismounted man, unacquainted with its geography, excepting near its southerly extremity, where the United States government has constructed a crossing at a heavy expense, for the purpose of connecting Fort Stanton with the settlements on the Rio Grande. But thanks to the combined efforts of Mr. Llewllyn (the White Oaks mail contractor) and some of the Socorro merchants, a road has been constructed over the Mal Pais on the direct line between Socorro and White Oaks; and this we crossed on a night so dark that even the ears of the mules were invisible from our seat beside the driver, and our nerves were spared the sight of the yawning chasms and jagged slopes on each side of us, until a torch, improvised from the last number of the ENGINEERING AND MINING JOURNAL, showed us in ten seconds such a wilderness of appalling abysses in every direction, and such a tiny tight-rope of a road before us, that we were glad to drop the torch into one of the crevices almost under our wheels, and, holding our breath, to await the welcome sight of the fire on the opposite bank, which showed us that our perils were over, and that a cup of hot coffee was awaiting us to counteract the chill night air, while fresh mules were harnessing.

In spite of this very narrow and dangerous crossing, serious accidents are rare. The driver trusts entirely to his mules, who are selected for their steadiness and sureness of foot; and with ears turned forward to the extreme limit of possibility, and noses almost touching the ground, they pick their way slowly but surely for more than a mile of such traveling.

Just as the sun rises, we enter the one long street, on each side of which is built the town of White Oaks. One day's careful examination of the mines showed me conclusively, what I had already inferred from the statements of unprejudiced mining friends; that is, that this district has been much overestimated, and that its reputation has been built up on the strength of a few hundred pounds of free-gold specimens, rather than on the solid foundation of large veins of milling ore.

Up to the time of my visit, the gold production had been exceedingly small, being limited to the output of one arrastra and a few lots of low-grade ore treated in a five-stamp mill.

I am leaving out of consideration the placer gold that has been produced from a small gulch at the lower end of the town, but which, according to all reports, must have been very inconsiderable.

I should ill reward the kindness and attention shown me by the superintendents of the two principal mines by speaking disparagingly of what I was enabled to see through their politeness; therefore, I will adhere to my practice of mentioning no names, and only describe the main features of the district.

The entire reputation of the camp depends upon two or three fissure-veins that have been traced some two thousand feet on the surface, and at several points have yielded exceedingly rich specimens of free gold. The gangue-rock is a bluish-white quartz, very hard and tough, and containing threads and bunches of oxide of iron, resulting from the decomposition of pyrites, and which is the matrix of the gold. Numerous pieces of this honey-combed quartz, showing considerable iron, but not a speck of free gold, have assayed far into the thousands.

The deep workings of these veins present a rather discouraging appearance; and in two spots, where the principal vein has been struck by a tunnel at a depth of between one and two hundred feet, the crevice, though well defined, is entirely barren, and drifts run upon it for a hundred feet or more have failed to show any ore worth mentioning.

The usual mistake of building a mill before having a mine has been committed by the principal company operating in this section: but in this particular instance, the error will be less apparent than usual, as the mill, which was not quite completed at the time of my visit, is utterly incapable of treating any considerable amount of ore. Suffice it to say, that it consists of a patent coffee-mill crusher, one patent iron grinding arrastra, and a number of patent amalgamators, in which, in some incomprehensible manner, electricity is to assist in the saving of the gold, and that this plan is confidently expected by the officers of the company to reduce from 40 to 60 tons of ore per day, and it naturally becomes of less moment that there are only twenty or thirty tons of ore worth handling on the dump, and that the stopes are not capable of yielding more than four tons of ore daily that will pay the expense of milling.*

On the western slope of the White Mountains, and close under the shadow of the Little Nogal peak, are the head-waters of the Rio Bonito; and well it deserves its name, as a prettier little stream and a more charming valley than that which it waters would be hard to find. Unfortunately, the greater part of this district lies within the limits of the Mescalara Apache reservation, and though the tract of country in which the mines are situated is so rugged and barren as to be totally useless to

* Since writing the above, I have seen it stated in a New York journal, that the mill I have just criticised has proved a complete failure, and that the owners now propose to erect an ordinary stamp-mill. This is the proper method of treating the White Oaks ores; but I fear the quantity is too small to warrant any very sanguine expectations of ultimate success.

the Indians, all attempts to influence the Department of the Interior to throw open the district to prospectors had failed up to the time of which I write. Though the miners are in no wise annoyed by the Indians, who never visit this part of their reservation, still they are unable to obtain a clear title to their property, and consequently to induce capitalists to interest themselves in a district which promises to be of considerable value.

The only vein opened enough at the time of my visit, to enable me to form any opinion as to its character or value, was the Christmas lead. This is a strong fissure-vein, running nearly north and south through a granite formation, and carrying two separate and distinct bands of ore. On one side is a narrow vein of from two to twelve inches in width, of heavy-spar, specked with fine-grained galena and sulphurets of silver. Selected specimens assay high into the hundreds, and several tons of this ore, sampled and sold at Socorro, yielded about 150 ounces of silver to the ton, to the best of my recollection. The other parallel ore-streak is some three feet in width, and consists of coarse-grained galena, scattered through a gangue of heavy-spar and quartz. The pure galena assays about forty ounces in silver, and in spite of the rather unfavorable gangue-rock, can probably be concentrated to advantage. The rich ore would be properly treated by chloridizing, roasting, and amalgamation.

The Bonito River crosses this vein in the valley below, and with a very small outlay for dam and ditches, will furnish forty horse-power for nine months in the year.

I visited many other prospects in this vicinity, nearly all of them showing quite strong veins of decomposed galena and carbonates, and most of them rather low in silver; but taking into consideration their size, the adaptability of the ore to concentration, the fact that the majority of them can be opened by tunnels on the vein, and the admirable water-power, that may be made to drive half a dozen mills in the course of two miles, I consider this district one of the most promising yet discovered in New Mexico.

GENERAL MINING NEWS.

ARIZONA.

QUEEN CITY COPPER COMPANY.—A large shipment has just been made. The furnaces are running day and night.

MARICOPA COUNTY.

CENTRAL ARIZONA.—The secretary furnishes us with the following statement of gross product and total expenditure for October:

GROSS PRODUCT.

1328 ounces bullion	$21,505.58

EXPENDITURES.

General expenses	$508.38	
Exchange	289.20	
Water service	1,690.48	
Mine	5,880.20	
Mill	7,268.22	
Dead-work	1 639.00	
Lopez matter	32.00	17,307.48
Net over expenditure		$4,198.10

Running time, 29 days 12 hours. Ore and waste crushed, 6498 tons. Average product per ton milled, $3.31. Average expenditure, $2.74. Assay of tailings for the month show average loss $1.32, of which the amalgam loss was 13 cents per ton, the remainder being sulphurets.

TOMBSTONE DISTRICT.

The Tombstone *Epitaph* says that there is absolutely nothing new to report since our last review. The usual work of development has steadily advanced, making some real showing where it has been assiduously sought, and in all quarters the progress is of a satisfactory nature.

Recent dispatches state that several prospects have been sold during the past week in Tombstone at nominal figures. The Vizina Company has resumed the sinking of the main shaft. The reported consolidation of Head Center and Tranquillity is denied by some of the owners. Active operations are to be pushed on the Old Guard mine. Work on the Cumberland mine has begun.

CALIFORNIA.

THE BODIE DISTRICT.

There is nothing of importance to report from this district. The work at the different mines continues with satisfactory results.

GRASS VALLEY DISTRICT.

The Foothill *Tidings* contains the following:

EMPIRE.—The 1300 level has proved to be a better one than any other ever opened up in the mine.

IDAHO.—The 14-foot level is rapidly opening up. The 11th, 12th, and 13th levels have proved to be of great value.

IMPERIAL.—The shaft is down 160 feet. The company has made a purchase of the old Dartmouth mill, and that structure is in process of removal from its present site, and will soon be placed on the Imperial.

GREENVILLE DISTRICT.

The *Bulletin* reports as follows:

CHEROKEE.—Sinking is about completed. Levels will be run from the bottom of the shaft and stoping begun as soon as possible. The additional depth made in the shaft has been nearly all the way in good ore.

GREEN MOUNTAIN.—The mill continues to run satisfactorily. The lower tunnel is pushed along as rapidly as possible.

MONITOR.—Work in the tunnel is going right along with satisfactory results to the owners. The ore-body is looking well, with indications that both quantity and quality will show still more improvements as the mine is further opened up.

PLUMAS CONSOLIDATED.—The work of prospecting is going on steadily, and a large area of ground is opening up with satisfactory results.

TAYLOR-PLUMAS.—Contracts for building the mill are virtually completed, and the work will be begun and pushed through with as little delay as possible.

CANADA.

BRITISH COLUMBIA.

A dispatch from Victoria says that, during the past season, 330 men were employed in the Cassiar mining region. The amount taken out ranged from $150,000 to $175,000. The outlook for next year fully equals that of the present year.

OTTAWA.

An order in council has been passed providing that the toll on crude gypsum going west through the St. Lawrence canals shall hereafter be five cents per ton.

The *Montreal Gazette* says that iron mining is actively prosecuted in the township of Lavant and generally along the line of the Kingston & Pembroke Railroad. One company has received an offer of $180,000 for its property.

According to Canadian exchanges, Mr. Allen's phosphate mine in Portland was recently sold to some New York capitalists. The price paid was $20,000, which was given as an equivalent for a quantity of ore mined ready for shipment, and $125,000 of stock in a joint-stock company with a paid-up capital of $250,000. It is the intention of the company to develop the mine to its utmost capacity, and eventually to erect a crushing-mill. The mine is known to be one of the richest in Ottawa County.

COLORADO.

CHAFFEE COUNTY—TOMICHI DISTRICT.

The Chaffee *Times* reports the prospects favorable on Granite Mountain, near White Pine, where several very rich veins have been opened this year. Two new discoveries were made about a week ago. The most important was in the Flirt lode, a property belonging to the White Pine Gold and Silver Mining Company. The find was made in working the assessment. At a depth of twenty-three feet, a body of ore four feet in thickness was uncovered, assaying as high as 500 ounces in silver.

CLEAR CREEK COUNTY.

FINANCIER LODE.—The ore and shaft-house has been completed, and sinking of the shaft has been resumed. It is 28 feet deep and shows an ore-vein 14 inches wide that carries a large amount of silver glance. Fifty sacks had been shipped to the Freeland smelter.

SEVEN-TWENTY.—The superintendent reports that he has finished the work of cleaning out the old shafts, drifts, and stopes, preparatory to active work. He expects to extend the levels and sink deeper the main shaft, now 235 feet, before he begins stoping.

TENTH LEGION.—It is rumored that operations will be resumed.

DOLORES COUNTY.

Mr. Linwood O. Towne, of Rico, sends us the following: The Grand View smelter started operations October 25th, and has been running successfully ever since. Bullion shipments have commenced, being carried by mule-trains thirty miles over the mountains to Rockwood, the nearest shipping-point of the Denver & Rio Grande Railroad. During the summer, the works have undergone extensive improvements—concentrating machinery, now working with good satisfaction, a new furnace, etc., having been added. A tramway has been built down from the company mines, from which ore is daily received. The Newman Group and the Little Maggie are also sending ore to the smelter. H. J. Hardess, formerly metallurgist of the Grant smelter, Leadville, superintends the furnaces and concentration machinery.

JOHNNY BULL.—Work is steadily pushed and ore shipped to Argo. The large percentage of copper in the ore makes it unfit for economical treatment here, where none of the works as yet reduce copper.

GILPIN COUNTY.

HASELTINE MINING COMPANY.—The Central City *Register-Call* says that workmen have been put to work in getting things in readiness for resuming the development of the mine and clearing it of water. The concentration-works just below the main shaft building are to be put in running order.

ROLLINS.—Connection has been made from the west tunnel level of the Perigo mine with the shaft west, sunk by the company some years ago. The crevice of the Perigo does not diminish in width, every thing taken out either going to the smelter or the sixteen-stamp mill at Gold Dirt.

HINSDALE COUNTY.

FRANK HOUGH.—A rich strike has been reported.

LAKE COUNTY

Late Leadville exchanges contain the following:

The product of Leadville smelters, for the month of October, as given by the *Democrat*, is approximately as follows. The figures are not intended as showing the output of the camp, but simply what the smelters are doing:

Harrison Reduction-Works, 860 tons of bullion, containing 120,000 ounces of silver. Arkansas Valley Smelter, 550 tons of bullion, containing 84,000 ounces of silver. American Smelter, 201 tons of bullion, containing 29,330 ounces of silver and 447 ounces of gold. Cummings & Finn's smelter, 709 tons of bullion, containing 117,225 ounces of silver and 173 ounces of gold. Grant (Elgin) smelter, 382⅓ tons of bullion, containing 50,585 ounces of silver. La Plata smelter, 484 tons of bullion, containing 113,740 ounces of silver. According to these figures, the entire shipment product had a value of about $909,242, as follows: Lead, $317,900; silver, $578,942; gold, $12,400.

The Forfeit, Ocean Wave, White Cap, Little Missouri, and Norman Boardman, aggregating an area of about nine acres of very promising and productive territory, have been recently consolidated, and a company has been organized, to be known as the Iron Hill Consolidated Mining Company.

ÆTNA.—During the month of October, produced about 200 tons of ore. Forty tons of this product averaged 312 ounces in silver and 24 per cent in lead. The rich ore-body opened on the upper terrace of the limestone, or east of the fault, has been opened to the break, and is now explored on the fissure of the fault. A new shaft was begun some time since, and is following down on this ore-body. Cross-cut No. 5 from the main level north, extending from the Chadbourne shaft, is pushed forward, and an incline is said to be made up on the ore, as soon as the vein is intersected.

ARGENT.—At the annual meeting, held in Philadelphia recently, the president's report was presented, detailing the efforts of the superintendent during the past year, and stating that the prospects were most encouraging. Expenses were reported amounting to $36,948.20, and the receipts from sales, etc., $17,270.83. The present balance in the treasury is $6464.14. The following were named directors for the ensuing year: A. G. B. Hinkle, M.D.; Charles H. Graham, J. T. Hampton, M.D.; J. B. Wilson, Henry Lipman, James Fuller, M. Perrine, A. Wasserman, and H. R. Deacon.

MATCHLESS.—The north workings continue following a rich body of ore to the northeast. A new shaft will soon be required to work this portion of the mine successfully.

LONG & DERRY.—Mr. L. W. Thiele has sent us the following: This mine is situated on Long & Derry Hill, at a distance of five and a half miles from the center of Leadville. The formation of the Long & Derry Hill, as set forth by Mr. S. F. Emmons, is principally white porphyry, lower quartzite, granite and gneiss, and blue limestone. Shortly after the discovery, a rich pocket of mineral was uncovered by Long Brothers, enabling them to prosecute farther exploration. The mineral consists of chloride of silver, carbonate of lead, and iron, which occur in pockets throughout the black or crystallized limestone: the mineral being found in pockets, leads to a desultory manner of work. Few drifts are on the same level, and many a pocket of mineral was reached at great expense. Recently, G. R. Fisher and associates, of the Bank of Leadville, have taken hold of the property with a determination to make it pay, under the able supervision of Mr. J. C. Langhorne, who intends to work the property by the Long & Derry tunnel, placing machinery on one of the lower shafts and drifting in one of the upper levels.

LA PLATA COUNTY.

WHEEL OF FORTUNE.—A dispatch to the Denver *Republican* says: It has been decided not to do any more stoping during the winter months, and so the work has been suspended until such time as Mr. Symington, the consulting engineer, shall arrive in New York, when he will confer with the owners as to the nature of the work to be done. It is probable that about eight men will be kept at work all winter driving No. 1 level, and stoping be resumed as soon as the trails and roads are open in the spring. All the workings are in good shape.

SUMMIT COUNTY.

GOLD PARK.—The company's new desulphurizing furnaces and grinding and amalgamating mills, says the Leadville *Democrat*, are now in successful operation.

The new machinery has been started up. One of the new grinding and amalgamating machines is run at one third the expense for motive power of the ordinary stamps, and will treat from fifteen to eighteen tons a day.

ROBINSON.—The Robinson *Tribune* says that the company is putting in stations, and the cage in the shaft is preparing for work, after which more extensive shipments will be made. Manager Parker will as soon as possible sink to level No. 12. It is expected that the incline will cut the vein of level No. 11 before the twelfth level is reached, which will enable shipments to be made from the ncline, thus making the work of development pay for itself.

DAKOTA.

CALEDONIA.—The superintendent reports for week ended November 5th: Ore extracted, 875 tons; 901 ounces gold shipped (value about $14,000).

FATHER DE SMET.—Report of the superintendent from November 1st to November 8th shows ore extracted from first level, 900 tons; ore extracted from second level, 1000 tons; total, 1900 tons. Ore milled, 1950 tons. Justice drift advanced 10½ feet. Drift in 166 feet. Clean-up for the last half of October yielded $1761.

GEORGIA.

CONSOLIDATED GOLD MINING COMPANY.—The company has decided to erect a sixty instead of a forty-stamp mill on the Ivey property.

SINGLETON GOLD MINING COMPANY.—The three mills belonging to this company are running regularly. At the last clean-up, the yield is said to have been large.

MAINE.

BLUE HILL.—The *Journal* says that operations are pushed with vigor in all departments. The concentrating-mill is running steadily, and the smelting-furnace is turning out a large amount of matte. The main shaft is now close to the third level, and sinking will shortly be resumed.

DOUGLAS COPPER COMPANY.—At the annual meeting, the following officers were elected: Secretary, F. H. Williams; Directors, Charles Hamlin, Stephen Jennings, Dr. A. C. Hamlin, H. Gregory, Jr., I. S. Johnson, Edward Swazey, J. W. Norcross. At a subsequent meeting of the board of directors, Gen. Charles Hamlin, of Bangor, was elected president. It was voted that the board should hold monthly meetings, and the by-laws were so changed that the treasurer is to be elected by the directors instead of by the stockholders. Dr. A. C. Hamlin was chosen clerk. Mr. Frank H. Williams will continue to serve as treasurer.

SULLIVAN.—The mill is running regularly, putting through about seven tons of ore daily. The plunger pump has been working admirably for several weeks. It is 300 feet vertical depth, 6-foot stroke, size 12 inches, and forces through a 12-inch discharger. The Waukeag shaft is let on contract for another 50 feet.

MEXICO.

CORONAS.—The Coronas vein, at Tlalpujahua, comprising the Concepcion, San Juan, and Coronas claims, has been entirely cleared of water. Its history is interesting and illustrates what can easily be done. Its owners are three Mexicans and two American miners, one of whom had practical knowledge gained by long experience in Colorado and Utah mines. After acquiring legal possession of the abandoned property, they put in a No. 8 Blake pump, and in a comparatively short time cleared the mine of water and *débris*. A few arrastras were started for working the lower-grade ores, and the ores of first, second, and third grade were shipped to Germany. Now the arrastras have given way to a new and complete five-stamp mill crushing dry through a 60-mesh steel wire screen, and run by a 40-foot overshot wheel with a three-foot breast. A rock-breaker, 3 reverberatory roasting-furnaces, 3 amalgamating barrels, and all other necessary appliances are in constant operation, and the entire plant has been paid for by the mine itself. Its owners brought in only willing hands and intelligent heads as capital. The shaft is 106 feet deep and shows a vein 18 feet wide in many places, but averaging about nine feet, with both hanging and foot-walls of slate. The above-mentioned Blake pump handles the water by running only half-time. The presence of reduction-works has put a stop to the foreign shipment of ores.

LA BLANCA.—The *Financier* says: The La Blanca Mining Company, at Pachuca, at a depth of about 500 feet, has struck a body of ore over six feet wide and yielding over 400 ounces in silver and 25 grains of gold per ton. The new strike is within 70 feet of the point at which the adjoining mine, the Santa Gertrudis, is now yielding her bonanza. It is expected that the two mines will be connected by drifts in about nine weeks, when the mutual facilities for working will be much increased. This company, composed of English and Mexican capitalists, has spent about $100,000 in the development of the mine.

MONTANA.

A dispatch to the *Tribune* from Helena says that the largest sale of mining property ever made in Montana was consummated here November 14th. The famous Drum Lomond mine, at Marysville, twenty miles from Helena, was sold by Thomas Cruse for $1,500,000 to the London Mercantile Association, of London, England. The conditions of the sale are: $25,000 cash, $600,000 in monthly payments of $200,000 each, the first of which will be due February 11th, 1884, and $875,000 in paid-up, unassessable stock of the company. It is provided that the capital stock shall not exceed $2,500,000, and $500,000 of stock is to be set aside for working capital.

NEVADA.

The old mill at Mineral Hill, which has been idle for some time, is repairing, and will soon resume operations on a lot of low-grade ore.

ALBION.—Furnace No. 1 was started November 4th. The *Sentinel* says that the works throughout are complete, and within another week furnace No. 2 is expected to start. The two have a smelting capacity of 100 tons per day, and when the dust-chamber and flue to carry off the fumes are completed, these works will be more complete than any other on the coast. The end of a four years' struggle, coupled with a large expenditure of money, was practically reached when the first bar of bullion was turned out from the furnaces.

BELLE ISLE.—Within one month, it is expected to reach a point on the 350 level under the ore-body encountered on the 250 level.

MARTIN WHITE.—Milling ore began November 13th.

UTAH.

BEAVER COUNTY.

FRISCO MINING AND SMELTING COMPANY.—A correspondent of the Salt Lake *Tribune* says that the next important property to the Horn-Silver is the Frisco Mining and Smelting Company. It works the Carbonate mine through a shaft in 600 feet, and is putting down another shaft, which has reached 180 feet. Near the mine is the concentrator, operated by steam. The ore is taken in at the top, run through a crusher, then into a long rotary roaster, then to Cornish rolls, is elevated, and, passing down, goes through jigger-machines, which concentrate into several grades of fine ore. This process concentrates three or four tons of crude ore into one, while it removes the quartz and prepares the ore for easy smelting. The tailings are taken to a washing apparatus, which collects about all the metal left in them, so that the waste is remarkably small. The ore, when ready for smelting, is taken to the works, a mile distant. The smelter is operated by 25 men. Five kilns make part of the charcoal used, at a cost of 16 cents per bushel. Each kiln burns at one time 32 cords of wood, making from 1200 to 1500 bushels of charcoal—piñon pine, at a cost of $6 per cord, being used. It takes from six to ten days to burn a kiln. The company uses about 30,000 bushels of charcoal per month, besides about ten cords of cedar wood per day, at a cost of $3 per cord.

Work is vigorously pushed at the Copper Gulch, Comet, and Cactus mines.

Considerable excitement, says the Salt Lake *Tribune*, has been caused by the diamond discoveries at a place twenty miles southeast of Frisco. The land where they are found covers about 300 acres of wash or gravel-beds, and it is asserted that gold is also found in the same ground. A rush was made to the place last week, and the ground was staked off in claims in the names of various persons here. Tiffany & Co., of New York, have had samples, which they pronounce of value.

GARFIELD COUNTY.

During the past summer, says the Salt Lake *Tribune*, a force of men was engaged in opening up the mines in Antimony District, and considerable ore was taken out. The American Antimony Company owns about twenty-five claims, and has been working sixteen of them, but has for the present stopped development until a smelter, now on the way, can be erected. It is expected that this smelter will be ready for operations in about four months. The veins lie nearly horizontal, and vary in thickness from six to ten feet. Much of the ore runs about 25 per cent metal. The veins are located in sand-rock, under which is a bed of conglomerate.

MILLARD COUNTY.

DESERET.—This is a Chicago company, organized under the lawsof Illinois, with a capital of $500,000 in $10 shares, one half being held for working capital. Mr. John Gordon, of Chicago, is President; Ira W. Buell, Vice-President; C. C. Davis, Treasurer; E. P. Hall, Secretary; and David Crafts, Superintendent. The prospectus recently issued contains a report by G. C. Robbins, M.E., of Amherstburg, Ont., dated May 25th. The principal developments are on the E. P. H. On the surface, the vein is five feet wide, and at the bottom of the 100-foot shaft had reached a thickness of nine feet. It is stated that the rock taken from the shaft yielded about 500 tons of ore, running $20 in gold and twelve per cent of copper. At a depth of 86 feet, a streak of chloride ore was encountered, which, at the depth of 100 feet, has widened to 18 inches, and gives from $36 to $43 in gold and silver per ton, and 14 per cent bismuth. Of this ore, there are on the dump from 35 to 40 tons. The company possesses, besides the Deseret, two other mines—the Cave, on the same vein as the E. P. H., and the Illinois, on a spur.

SALT LAKE COUNTY.

GERMANIA SMELTING AND REFINING COMPANY.—The new white lead-works building by this company will have a capacity of 3000 tons per annum, which can be increased to 5000 tons without enlarging the power or buildings. The product of refined lead by the company will aggregate 6000 tons for the year 1882.

SUMMIT COUNTY.

CRESCENT.—Ore is shipped to the smelters at Park and Salt Lake City, for reduction. The condition of the roads from the mine down to Park City is such that the company can not get teams to haul all the ore it desires to send out.

MINERAL PATENTS GRANTED BY THE UNITED STATES LAND-OFFICE.

The following patents were promulgated from the General Land-Office, November 3d, 1882:

ARIZONA.

PRESCOTT LAND DISTRICT.

T. W. Otis, upon the Apache Panther lode.

TUCSON LAND DISTRICT.

Cincinnati Gold and Silver Mining Company, upon the Cincinnati lode. Theodore F. White *et al.*, upon the Sultana lode. Charles T. Etchells *et al.*, upon the Herald lode. J. L. White, upon the Blue Monday lode.

CALIFORNIA.

SACRAMENTO LAND DISTRICT.

George Allen and P. Quirold, upon the Maximilian quartz mine. John A. Davis, upon the Peerless lode.

COLORADO.

CENTRAL CITY LAND DISTRICT.

Mansfield Mining and Milling Company, upon the Pioneer lode and mill-site and the Milton lode and mill-site. Moses Neilson, upon the Argo lode. John P. Davis, upon the Quartermaster lode. Joseph B. Johnson, upon the Morris County lode. William H. Doe, upon the Golden Link lode. Jane Elliot, upon the Golden Fleece lode. Decatur Silver Mining Company, upon the Herschel lode. H. N. Coffey, upon the Snow-Bound lode. Nathan S. Hurd, upon the Argentine lode. Samuel V. Newell, upon the California and Indiana lodes. The Rara Avis Gold and Silver Mining Company, upon the J. P. Whitney and Rara Avis lodes. Joshua R. Hunt *et al.*, upon the Red Cloud lode. Frederick E. Jodery, upon the Corner Stone lode. Charles L. Janes *et al.*, upon the Columbian Chief lode. Harley B. Morse *et al.*, upon the Kitty and Mosell lodes. Thomas McHugh, upon the Dolly Varden lode. William Penn Mining and Smelting Company, upon the William Penn lode. Nathaniel J. Moss, upon the Ariadne lode. Vinson Green *et al.*, upon the Monitor lode. Henry W. Lake, upon the Bobtail lode. Thomas W. Jones, upon the Mary Ann lode. The Gem City Mining Company, upon the Monarch lode. Cyrus S. Poley, upon the Smoky Hill lode. Hal Sayr, upon the Freedom lode.

DENVER LAND DISTRICT.

The North Park and Vandalia Mining and Smelting Company, upon the Josephine and Massillon lodes.

LAKE CITY LAND DISTRICT.

Charles Newman *et al.*, upon the Swansea and Chestnut lodes. George W. Cassler *et al.*, upon the Gladiator lode. James Bryce *et al.*, upon the Bloomington lode. The Waldron Consolidated Silver Mining Company, upon the Hite Wing and Waldron lodes. F. H. Whitney *et al.*, upon the Osceola lode. The Sunshine Mining Company, upon the Rebel Boy and Eastern Rebel Boy lodes. Alexander Hazard *et al.*, upon the Millionaire lode. Albert Bernard, upon the Diamond lode and mill-site.

LEADVILLE LAND DISTRICT.

James Moynahan *et al.*, upon the J. G. Blaine lode. Thomas G. Gibson *et al.*, upon the Maud Hicks lode. Charles W. Ellis *et al.*, upon the Laura lode. G. W. Haldren *et al.*, upon the Haldren lode. A. Winkelman, upon the Winkelman lode. George W. Lindgreen *et al.*, upon the Iron Mask lode. H. R. McClelland, upon the Ohio Boy lode. S. R. Dimock and J. A. Dimock, upon the Warsaw lode. S. R. Dimock *et al.*, upon the Willimantic lode. B. F. Betser, upon the Pine Forest lode. Anglo-American Mining Company of Colorado, upon the Grand Review lode and mill-site. Ernst Hoelke *et al.*, upon the Juniatta lode. Charles C. Rickard, upon the Martha Barney lode. M. N. Campbell *et al.*, upon the Sunday lode.

DAKOTA.

DEADWOOD LAND DISTRICT.

Resumption Gold and Silver Mining Company, upon the Resumption and Resumption No. 2 lodes. Cephas W. Carpenter *et al.*, upon the Center Fraction lode.

MONTANA.

HELENA LAND DISTRICT.

Patrick H. Meagher *et al.*, upon the Pilot lode. Andrew J. Davis, upon the Wapello lode. National Mining and Exploring Company, upon the Little Muddy lode and mill-site. Henry S. Clark *et al.*, upon the Lowville lode. John Streicher *et al.*, upon the Narrow-Gauge lode.

NEVADA.

CARSON CITY LAND DISTRICT.

Goodwin Consolidated Mining Company, upon the Plumas lode and mill-site,

and the Goodwin lode. East Mount Diablo Mining Company, upon the First Easterly Extension of the Mount Diablo quartz lode.

EUREKA LAND DISTRICT.

Manhattan Silver Mining Company, upon the White, First East Extension, White No. 2, Warren, and Rouck lodes. A. K. Green, upon the Hillside lode.

UTAH.

SALT LAKE CITY LAND DISTRICT.

W. H. Scott *et al.*, upon the Eclipse Extension and Crystal lodes. William A. Pitt *et al.*, upon the Legget lode. Liberty E. Holden, upon the Silver Gauntlet lode. Samuel P. Hoyt, upon the Crawford and Keystone lodes. Frank G. Brown, upon the Hope lode. Henry M. May, upon the Lead Mine lode. Charles W. Bennett, upon the Centennial Eureka lode. H. W. O. Margary *et al.*, upon the Silver Chief lode.

NEW COMPANIES.

ARIZONA.

Cababi Mining Co. Capital, $1,000,000 ; shares, 200,000. Incorporators, W W. Dreyfus, Samuel Steinburger, D. J. Wood, F. H. Treat, and John Bigelow, all of Philadelphia.

Tucson Smelting and Milling Co. Capital, $200,000 ; shares, 20,000. Operations, United States. Incorporators, James H. Toole, C. R. Drake, Samuel Hughes, H. S. Stevens, A. D. Otis, Albert Stienfield, R. C. Pearson, P. R. Tully, R. N. Leatherwood, J. C. Handy, William A. Scott, Jr., S. B. Kane, and Joseph C. Perry.

CALIFORNIA.

Benson Mining and Smelting Co. Capital, $3,000,000. Directors, Alfred Eoff, Salomon D. Brastow, Edward B. Young, San Francisco ; Henry Wadsworth, Joseph S. Robeson, Oakland.

Buckskin Consolidated Mining Co. Capital, $10,000,000 ; shares, 100,000. Operations, Sawtooth Mining District, Alturas Co., Idaho. Directors, George S. Evans, E. J. Moore, William H. Sharp, Patrick J. White, Peter B. Quinlan.

Comet Gold Mining Co. Capital, $5,000,000. Directors, J. H. Ritchie, E. Marks, C. H. Burton, P. J. White, and R. W. Van Brunt.

Horse Shoe Mining Co. Capital, $1,000,000 ; shares, 100,000. Directors, S. H. Mather, F. K. Shattuck, C. A. Tuttle, C. E. Gillet, and Martin White.

Montezuma Mining and Smelting Co. Capital, $1,000,000. Operations, Inyo County, Cal. Directors, Joseph H. Redmond, W. J. Gray, James Madison, A. M. Stetson, and A. H. Griswold.

Morning Star Consolidated Mining Co. Capital, $10,000,000. Operations, Arizona. Directors, B. L. Peel, M. Kelleher, George Harris, George S. Carrier, W. H. H. Hart, J. B. L. Brandt, T. W. Nowlin.

CANADA.

Revenue Consolidated Mining Co. Capital, $250,000 ; shares, 50,000. The object of the company is the prospecting for minerals, the digging, mining, crushing, smelting, and raising of ores and minerals, and the carrying on of general mining business. Incorporators, Daniel W. Clark, Albert Betts, Henry Vaughan, Henry Duffell, and John H. Harding.

COLORADO.

American Mineral Exposition Co. This company is formed for the purpose of carrying out the objects of the National Mining Association, so far as the erection of a permanent exposition building in Denver is concerned. Incorporators, Thomas H. Noland, of Boulder ; W. C. Hadley, of Las Vegas, New Mexico ; Jesse Gilmore, of Clear Creek ; Thomas Manning, of Gilpin ; W. P. Harbottle, of Hinsdale ; John Shepperd, of La Plata ; and R. N. Daniels, of Custer.

Bank of England Silver Mining Co. Capital, $500,000 ; shares, $10. Operations, Summit County, Colo. Incorporators, Frank H. Austin, Q. J. Wellington, and Henry McAllister, of Colorado Springs. Principal business office, Colorado Springs, El Paso County.

Calbrack Mining and Milling Co. Capital, $4,000,000. Operations, Lincoln County, New Mexico, Idaho, and Colorado. Incorporators, S. A. Shepard, H. H. Shepard, and Nathaniel Baker. Office, Denver.

Cañon City Coal Co. Capital, from $250,000 to $500,000.

Chicago Mining and Milling Co. Capital, $1,000,000. Operations, Lake, Park, and Chaffee counties, Colo. Incorporators, David M. Hillis, George E. Weir, C. H. Vehmeyer, J. S. Hammond, and C. S. Redfield. Offices, Chicago and Leadville.

Claremont Mining and Milling Co. Capital, $200,000. Operations, Gold Mountain, in Tennessee Park, Lake Co., Colo. The principal business office, Leadville, with a branch office in Denver.

Clear Creek Gold and Silver Mining Co. Capital, $3,000,000 ; shares, $10. Operations, Clear Creek County. Incorporators, Arthur Pratt, Henry Hutchinson, and Charles T. Jones, of Philadelphia, and Isaac Shivers and William D. Robinson of Camden, New Jersey.

Concordia Mining Co. Capital, $300,000. Operations, Lake and Summit counties, Colo. Office, Leadville.

Crooke's Mining and Smelting Co., Limited. Capital, £1,000,000. Operations, Hinsdale County, Colo. Office, Lake City, Colo. John J. Crooke, Agent.

Detroit & Eureka Gold and Silver Mining Co. Capital, $1,500,000.

Eastman & Short Consolidated Mining Co. Capital, $6,000,000. Directors, Ellery B. Prescott, Willard Davis, A. Prescott, H. E. Ball, S. S. Walters, and A. T. Nathan. Principal office, Tomichi.

Lafayette Mining and Developing Co. Capital, $200,000. Operations, Gold Hill District, Boulder County, Colo. Incorporators, Cornelius Van Keuren, Herbert Van Keuren, and Irving Van Keuren. The principal business office of the company will be at Kingston, Ulster County, New York.

Leadville Concentrating Co. Capital, $10,000. Operations, Lake and Summit counties, Colo. Incorporators, J. W. Marden, Charles F. Cuno, P. P. McManus, and William C. Foster. Office, Leadville.

Leadville & Gunnison Gold and Silver Mining Co. has been reorganized and the name changed to the Chicago Mining and Milling Co. Managing Director, J. R. Hammond.

Lonark & Colorado Consolidated Mining Co. Capital, $3,000,000. Operations, Chaffee County, Colo. Incorporators, J. H. Dean, C. M. Deal, and A. W. Deal. Office, Maysville, Chaffee Co., Colo.

Monmouth Pool Mining Co. Capital, $5,000,000. Operations, Boulder, Larimer, Gilpin, Lake, Park, and Chaffee counties, Colo. Offices in Boulder, Colo., and Monmouth, Ill.

Range View Mining and Milling Co. Capital, $500,000 ; shares, $10. Operations, Clear Creek County, Colo. Incorporators, George A. Chipman, J. H. Le Moyne, John P. Hilton, and George W. Chipman. Principal office, Fall River Clear Creek Co., Colo., with a branch office in Boston, Mass.

Rexford Mining Co. Capital, $100,000. Operations, Colorado. Directors, George W. Akin, Edward L. Rogers, and Delos E. Finks. Office, Denver, Colo.

Ruby Independence Mining Co. Capital, $20,000. Operations, Colorado. Incorporators, Joseph H. Reed, Alvin W. Woodward, D. C. Wilcox, Henry Belden, Jr., and Clinton G. Reynolds. Office, New York City.

Snow Range Mining Co. Operations, Park and Summit counties, Colo. Incorporators, E. Humphrey, Augustus H. Phelps, L. Jay Smith, Charles Ramus, and R. S. Donaldson. Office, Denver, Colo.

ILLINOIS.

Chicago-Honduras Mining, Milling, and Commercial Co. Capital, $3,000,000. Operations, Central America. Incorporators, William O. Osgood, William J. McMullin, Thomas P. Robb, Harvey Edgerton, Charles J. Webb, and George A. Philbeck.

MICHIGAN.

Buzzo Mining Co. Capital, $100,000. Operations, Idaho. Incorporators, William H. Stevens, John S. Newberry, Thomas W. Palmer, and others. Office, Detroit.

Etna Iron and Exploring Co. Operations, the old Manganese Forty, east of the McComber mine. Officers, John C. Lewis, Pres.; J. M. Gannon, Sec.; J. W. P. Lombard, Treas.

NEW YORK.

Big Medicine Mining Co. Capital, $300,000 ; shares, $2. Operations, New York and Globe District, Gila Co., Arizona. Incorporators, William L. McAuley, Jonathan F. Whipple, James W. English, Judson Le Barre, Charles I. Snedeker.

Garnet Water Power and Mining Co. Capital, $100,000 ; shares, $1. Operations, in Lumpkin and White counties, Georgia. Incorporators, Elisha W. Andrews, Edward Tuck, and Albon Man. Office, New York City.

London Mountain Mining Co. Capital, $1,000,000 ; shares, $5. Operations, Leadville, Colo. Incorporators, William A. Ellis, Finley Anderson, Frank O. Burridge. Office, New York City

Mexican Gran Cuadra Association. Capital, $6,000,000; shares, $100. Operations, Concepcion del Oro, etc., Mexico. Incorporators, William L. Heermance, Gilbert Livingston Morse, Charles H. Emerson. The prospectus of this company has not yet been issued. Office, 195 Broadway, New York City.

Mineral Slide Consolidated Mining Co. Capital, $1,000,000 ; shares, $5. Operations, Butte County, California. Incorporators, John Campbell, M.D., Robert N. Woodworth, Henry E. Parsons, Stephen E. Temple, John D. La Monte.

Putnam County Iron Ore Co. Capital, $100,000 ; shares, $100. Operations, in Putnam County, New York. Incorporators, Francis J. McNamara, Samuel Waggoner, and John Leahy.

Shoshone Gold Mining Co. Capital, $50,000 ; shares, $1. Operations, Confluence of Snake and Raft rivers, Cassia Co., Idaho. Incorporators, John A. Shields, Henry R. Curtis, Wallace B. Post. Office, New York City.

Staten Island Mining Co. Capital, $100,000 ; shares $1. Incorporators, C. Vibbard, Henry T. Bragg, A. Jameson, T. A. Howland, Henry T. Bragg, Jr., C. H. Vibbard, F. A. Jameson. Office, New York City.

This company was organized to work iron ore-beds, and has taken up and is working the Towle property on Staten Island. It is now mining 75 tons per day, and expects to double that amount soon.

Wilson Gold Mining Co. Capital, $2,000,000 ; shares, $10. Operations, Lawrence and Pennington counties, Dak. Incorporators, Edward Jordan, William M. Brackett, W. H. Whiton. Office, New York City.

TENNESSEE.

National Mineral and Industrial Exposition. Capital, $300,000. The executive committee consists of ex-Governor Porter, Col. E. W. Cole, William M. Duncan, James C. Warner, Gen. W. H. Jackson, Robert Thompson, and W. H. Robinson. The exposition will embrace displays from every branch of industry in the Union as well as minerals and timbers. It is also designed to include those from Mexico, South America, and the West Indies.

WYOMING.

Vulcan Mining Co. Capital, $100,000 ; shares, $10. Operations, Wyoming, Idaho, and other territories. Directors, N. R. Davis, L. G. Jenks, and Frank Price. The office for the transaction of Wyoming business will be in Cheyenne. The Idaho office is at Albion.

FINANCIAL.

Gold and Silver Stocks.

NEW YORK, Friday Evening, Nov. 17.

The total number of shares sold at the Mining Exchanges this week exceeds that of last, but business has been very dull and has not been characterized by any thing of special interest. In fact, it is altogether the low-priced stocks that are dealt in, and this has been the case for some time past. Decatur leads the list in the number of transactions, but its manipulators have been unable to keep the price up, and it has suffered a very heavy decline. Robinson continues to be very actively dealt in, but the price has not materially changed. The Comstock shares, following the lead of the San Francisco market, have been weak, and this may also be said of the whole market with, perhaps, the single exception of the Tuscarora stocks, which continue strong. The number of mining shares sold at all the Exchanges is 497,463, as against 367,505 last week.

The Comstock shares have had a moderate business at weak prices. California sold from 20@24@21c., with a business of 6800 shares. Consolidated Virginia was quite active at irregular prices, selling from 64@60@63c. Sierra Nevada was quiet and a little weak at $5.38@$4.75@$4.90. Mexican was weak, selling from $4.63@$4. Ophir was dealt in to the extent of 250 shares at $3.25@$2.75. Best & Belcher sold at $5.25. Sutro Tunnel was active and steady, selling at 25@29c.

The Leadville stocks were quiet at about steady prices. Amie was quiet and a little weak at 12@9c. Chrysolite, with a business of 2600 shares, sold from $1.35@$1.40. Hibernia sold at 2c. Iron Silver was very active at irregular prices ; it sold from $2.50@$2.65@$2.50. Leadville had a quiet business at steady prices, selling at 60@59c. Little Chief was quiet and irregular, selling from 36@41@39c. Little Pittsburg showed considerable weakness, under a very moderate business ; it sold from 80@65c. Climax sold at 4c.

The Bodie stocks were almost neglected. Bodie records transactions of 630 shares, at $3.50@$3.15. Standard was very quiet at steady prices, selling from $5.88@$6.

The Tuscarora stocks were quite active and strong. Grand Prize sold at 30c. Tuscarora was quiet at 7c. Argenta had a fair business at irregular prices, selling from 40@30@32c. Belle Isle was very active at strong prices, selling at 45@55c., with transactions of 14,450 shares. Independence was also quite active at very irregular prices ; it sold from $1.25@60@74c. Navajo, with a quiet business, was strong at $5.63@$6.38@$6.13. North Belle Isle had a fair business at steady prices, selling from 28@35c.

In the miscellaneous list, the Green Mountain stocks have been very quiet, but prices continue very weak. Green Mountain was irregular at 30@37@34c. Rising Sun was quiet at 5@6c., while Cherokee has grown weaker under a moderate business, selling from 12@9c. The Quicksilver stocks have had a moderate business at steady prices, Preferred selling from $43@$43⅛, and Common from $9½@$9⅝@$9½. Robinson Consolidated has been very active at prices a little weak ; it sold from $1.55@$1,30@$1.40, closing

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	SHARES. No. in 1000's	SHARES. Par Value.	ASSESSMENTS. Levied to date in 1000's.	ASSESSMENTS. Date and amount per share of last.	DIVIDENDS. Total paid to date in 1000's.	DIVIDENDS. Date and amount per share.	HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE. Nov. 11. H.	Nov. 11. L.	Nov. 13. H.	Nov. 13. L.	Nov. 14. H.	Nov. 14. L.	Nov. 15. H.	Nov. 15. L.	Nov. 16. H.	Nov. 16. L.	Nov. 17 H.	Nov. 17 L.
Alice, Mon	400	25	*		400	De 81 10			2.15								2.15	
Amie Con., Co	500	10	*		305	My 81 10	.11		.11		.11		.10		12	10	.11	.09
Atlantic, Mich	46	25			140	Fe 82 2 50												
Argenta, Ne	100	100	225	No 82 25	40	Fe 80 20	.40	.30			.30		.32					
Bar & Walker, Ut.	100	10	*		60	No 80 10												
Bassick, Co	100	100	*		25	Fe 80 25												
Belle Isle, Ne	100	100	65	My 82 10	300	De 79 25	.55	.48	.51	.45	.52	.46	.55	.50	.55	.54		
Black Bear, Ca	30	100	15	Se 79 50	889	Se 82 30												
Belcher, Ne	104	10	2 62	Se 82 25	16897	Ap 76 1 00												
Bodie Cons., Ca	100	100	12	De 81 50	1295	No 82 20	3 50	3 38			3.30		3.50		3.25	3.15		
Bos'n & Mon, Mon.	200	5			200	No 82 05												
Breece, Co	200	25	*		2	Fe 80 1												
Bulwer, Ca	100	100	30	De 77 50	120	No 82 10												
California, Ne	540	100	580	Se 82 25	11320	De 79 50	.22	.21	.23		.21	.20	.21		.24	.23	.23	.21
Cal. & Hecla, Mich	100	25			22550	No 82 5 00												
Caribou Con., Co	100	10	*		50	Mr 80 10												
Carolina Q'n, N.C	100	2			8	Oc 82 02												
Castle Creek, Id	100	1			18	No 82 03												
Catalpa, Co	300	10	*		130	My 81 20												
Chrysolite, Co	200	50	*		1600	De 81 50	1.40	1.35	1.40		1.40	1.35	1.40		1.40			
Climax, Co	200	10	*		180	Au 80 30					.04		.04					
Cons. G. Mg., Ga	100	5	*		64	Au 82 04												
Cons. Va., Ne	540	100	897	Au 82 30	12330	Au 80 50	.63	.61	.63	.61	.62	.62	.63	.60	.63	.60	.63	
Copper Queen, Ar.	250	10	*		500	Se 82 50												
Crown Point, Ne	100	100	2673	Fe 82 25	11388	Ja 75 2 00												
D'dw'd-Terra, Dk	200	25	*		800	No 82 05												
Dunkin, Co	200	25			200	Au 81 7/8												
Eureka Cons., Ne	50	100	100	My 76 1 00	4	Jy 82 25	14.0											
Evening Star, Co	50	10	*		1225	Oc 82 50												
Excelsior, Ca	100	100	300	Ja 82 1 00	875	Oc 81 25												
Fa. de Smet, Dk	100	100			510	No 82 20			4.25	4.00							4.00	
Findley, Ga	200	1	*			My 79 1					.10							
Freeland, Co	200	25	*		50	Sy 80 25												
Glass-Pend., Co	250	20	*		25	My 81 10												
Gold Stripe, Ca	150	10	*		76	Jy 81 15												
G'ld & Curry, Ne	108	100	3473	Se 82 50	4835	Oc 70 80												
Grand Prize, Ne	100	100	420	No 82 25	450	Se 80 25							.30					
Great Eastern, Dk	300	1	*		16	Jy 80 01												
Gr. Mountain, Ca	125	10	*		212	No 81 7/8	.35	.30	.32		.31		.37	.35	.36		.37	.34
Hale & Nor., Ne	112	100	4093	Se 82 50	1598	Ap 71 5 00												
Hall-And's'n, N.S.	150	1			7	Ja 82 05												
Hecla Con., Mon.	30	50			342	Ap 82 50												
Hibernia, Co	300	25	*		180	Jy 81 40			.02		.02				.02			
Homestake, Dk	100	100	220	Ap 78 1 00	1712	No 82 50	17 00				17.50	17.00	17.50				17.50	
Horn-Silver, Ut	400	25	*		1700	No 82 75	7.00		7.00				7.00	6.75			6.50	
Hukill, Co	200	5	*		210	De 78 10	.11		.11									
Indep., Ne	100	100	185	Fe 82 15	225	Se 79 05	1.25	1.20	1.00	.85	.85	.50	.90	.60	.88	.78	.87	.74
In. Queen, Ne	120	2	12	No 79 10	355	Se 82 01												
Inyo, Ca	100	5	*		45	Ap 82 05												
Iron Silver, Co	500	20	*		800	Oc 82 20	2.50		2.65	2.60	2.80	2.55	2.55	2.50	2.50			
Jocuistitta, Mex	100	100			750	No 82 1 00												
La Plata, Co	200	10	*		610	Se 82 30												
Leadville Co., Co	400	10	*		250	No 82 05												
Leeds, Ut	600	100	87	Ju 82 50	78	Oc 78 25			.60		.60	.59					.63	
Little Chief, Co	200	50	*		700	Au 80 50	.37	.36	.40	.39	.41	.40	.41	.40	.40		.39	.38
Little Pitts., Co	200	100	*		1350	Mr 80 50	.80	.75			.70		66	.65			.65	
Marin White, Ne	100	100	950	Se 82 25	90	Jy 79 30												
Moose, Co	200	10	4		550	Mr 78 25			.05									
Morning Star, Co	100	10			515	Oc 82 25												
Navajo, Ne	100	100	235	Mr 82 20	73	No 82 25			5.03		6.00		6.38	6.13	6.38		6.13	
N. Y. & Colo., Col	50	20			25	Jy 79 10												
N'h'n Belle, Ne	50	100			2300	No 82 50												
N. Belle Isle, Ne	100	100	55	Se 82 15	45	Se 82 15	.31		.30	.28	.33	.31						
Ontario, Ut	150	100			4775	No 82 50	37.00		37.00	36.00			11.00					
Ophir, Ne	100	100	3395	Jy 82 1 00	1595	Jy 82 1 00	3.25		3.25						2.75			
Osceola, Mich	50	25			810	Se 82 1 00												
Plumas, Ca	100	10	*		154	Jy 79 8												
Quicks. Pref., Ca	43	100			654	Ju 82 6 00			43.0		43¾	43 5	43¾	43.50				
" Com., Ca	57	100			151	Ju 82 40			9.50		9.88	9.50	9.75	9.50				
Quincy, Mich	49	25			3230	Au 82 5 00												
Rising Sun, Ca	150	5	*		52	My 81 7½	.06						.06				.06	.5
Robinson C., Co	200	50	*		575	No 81 50	1.50	1.45	1.55	1.45	1.50	1.40	1.45	1.35	1.35	1.30	1.40	1.35
Robt. E. Lee, Co	500	500			50	Jy 81 10												
Savage, Ne	112	100	3748	No 82 50	4460	Ju 69 3 00												
Sierra Nev., Ne	100	100	5050	Se 82 1 00	102	Ja 71 1 00	5.38	5.25					4.75		4.90			
Silver King, Ar	100	100			1200	No 82 25												
Silver King, Co	500	2			50	Au 81 10												
Socorro, N. Mex	2.5	100			4	Mr 82 34												
Sprig Valley, Ca	200	1	*		50	Ja 81 25												
Standard, Ca	100	100			3975	No 82 25	6.00		5.88								6.00	
Starr-Grove, Ne	200	10	*		16	Ju 81 10												
Stormont, Ut	200	1	*		155	No 81 05												
St. Joseph, Mo	100	10	*		370	Se 82 20												
Tip Top, Ar	100	100	170	Mr 80 50	100	No 81 20												
Tombstone, Ar	500	25	*		1350	Ap 82 10												
Vizina, Ar	200	25			140	Mr 82 10												
Yellow Jacket	120	100	5358	Fe 82 1 00	2184	Au 71 2 50												

* Non-assessable. † The Deadwood has previously paid $275,000 in eleven dividends, and the Terra $75,000. ‡ 48175.

SALES.—Alice. 600; Amie Consolidated, 7800; Argenta, 700; Belle Isle, 14,450; Bodie Consolidated, 630; California, 6800; Chrysolite, 2600; Climax, 300; Consolidated Virginia, 14,622; Eureka Consolidated, 50; Father De Smet, 300; Findley, 100; Grand Prize, 100; Green Mountain, 5800; Hibernia, 1400; Homestake, 270; Horn-Silver, 805; Hukill, 600; Independence, 13,600; Iron Silver, 10,300; Leadville Consolidated, 800; Little Chief, 4400; Little Pittsburg, 1200; Moose, 200; Navajo, 1000; Northern Belle, 100; North Belle Isle, 2400; Ontario, 255; Ophir, 250; Quicksilver, preferred, 800; Common, 1000; Rising Sun, 5600; Robinson Consolidated, 70,000; Sierra Nevada, 400; Standard, 250. Dividend shares sold, 160,892.

at the latter figure to-day. Alta-Montana has had a moderate business at weak prices, selling from 17@12c. Bradshaw has been quiet and a little weak, at 47@44@45c. Central Arizona, under a small business, has declined from 55@50c. Decatur has been quite active at very weak prices; it sold from 33@6@8c. Lacrosse sold to the extent of 3300 shares, at 17@16c. Oriental & Miller has grown a little weaker, under an active business, as compared with last week's prices, and has sold from 11@13c. Silver Cliff has been very active and very weak; it sold from 65@34@36c. South Hite, new, has been quiet and weak at 30@25c. South Pacific records an active business at prices a little weak, selling from 13@11c. The State Line stocks have been quiet and weak. Nos. 1 & 4 sold at 2@5@3c., and Nos. 2 & 3 at 12@10@11c. Taylor-Plumas has been active at irregular prices, selling at 13@15@14c. Washington has also been irregular at 14@9@14c. Whalen Copper Company records a moderate business at strong prices, selling at 22½@23c.

The Lake Valley stocks are dull, and there is very little doing in them. Sierra Grande is quoted at $4, buyer 60; Sierra Bella, 75@80c.; and Sierra Apache, 50@60c.

The Robert E. Lee Mining Company has reorganized under the laws of Colorado, and conveyed all its property to the Robert E. Lee Silver Mining Company, of Leadville, Colo. Capital, $10,000,000, divided into 500,000 shares of $20 each. The change of officers has not yet been announced.

DIVIDENDS.

The Contention Consolidated Mining Company, of Arizona, has declared its regular monthly dividend (No. 10) of twenty-five cents per share, payable November 28th, at the office of the Farmers' Loan and Trust Company, on all stock registered in New York. Transfer-books close November 18th.

The Homestake Mining Company, of Dakota, announces its fifty-first dividend (for October) of $50,000, payable at the office of the transfer-agents, Lounsbery & Haggin, 18 Wall street, November 25th. Transfers close November 20th. Total Homestake dividends to date, $1,712,500.

The Northern Belle Mining Company, of Nevada, has declared a dividend of fifty cents per share.

The Pleasant Valley Mining Company, of California, has declared a monthly dividend of five cents per share, payable on the 15th.

The Prussian Mining and Milling Company, of Colorado, has declared its regular monthly dividend (No. 9) of seven cents per share, or $10,500, payable at the office of Messrs. Simpson & Son, No. 18 Wall street, on the 25th inst.

The Robinson Bar Gold Mining Company, of Idaho, has declared its usual dividend of three per cent, for the month of October, payable November 20th.

MEETINGS.

Berkshire Consolidated Gold and Silver Mining Company, No. 55 Broadway. Annual meeting of stockholders November 21st, twelve M. Books close November 14th, and open November 22d.

REVIEW OF THE SAN FRANCISCO MARKET.

The Comstock shares on the San Francisco market have shown a general weakness over prices ruling last week, owing, it is said, to the unfavorable reports of the mines by the visiting experts. Considerable interest is taken in the Tuscarora stocks, and they were very strong, Navajo being the favorite. The other outside stocks were steady. The Ophir Mining Company had a cash balance of $57,970.74 on hand November 1st. On the same date, Mexican owed $3630.25, but is collecting an assessment of $100,000.

SAN FRANCISCO MINING STOCK QUOTATIONS

Daily Range of Prices for the Week.

NAME OF COMPANY.	CLOSING QUOTATIONS. Nov. 10.	Nov. 11.	Nov. 13.	Nov. 14.	Nov. 15.	Nov. 16.
Alpha		1¼	1	1¼		
Alta	½	7-16	13-32	7-16	11-32	13-32
Bechtel						1-16
Belcher	11-16	¾	21-32	11-16	11-16	11-16
Best & Belcher	5⅜	5¼	5	5	4⅞	4⅝
Bodie	3¼	3⅜	3¼	3½	3	3
Bullion						3-16
Bulwer						
California	3-16	¼	3-16	¼	3-16	¼
Chollar	1½	1½	1⅝	1⅝	1⅝	1¼
Con. Virginia	21-32	21-32	21-32	21-32	21-32	21-32
Crown Point	1¼	1¼	1¼	1¼	1¼	1¼
Eureka Con	12¾	12½		12	11	11
Exchequer	5-16	5-16		5-16		
Gould & Curry	3¼	3	2⅞	3	2¾	2¾
Grand Prize	¼	¼	3-16	¼	5-16	¼
Hale & Norcross	1⅝	1⅝	1⅝	1⅝	1¼	1¼
Manhattan						
Martin White	3¼	3¼		3½	3½	3½
Mexican	3½	4½	4⅜	4⅜	4¼	4⅜
Mono	¼	3-32	5-32	5-32	3-16	5-16
Mount Diablo	3⅜		3¾		4	4
Navajo		5¾	6⅛	6¼	6¼	6¼
Northern Belle	11¼	11¼	11	11	9⅛	9⅞
Noonday	5-16		5-16	5-16		5-16
Ophir	3⅛	3⅛	3	2¾	2¾	2¾
Oro	3-32	3-32	3-32	1-16	1-16	
Overman	3-16		¼	3-16	3-16	
Potosi	1⅝	1¼	1¼	1	15-16	13-16
Savage	27-32	¾	¾	21-32	11-16	¾
Scorpion	29-32	27-32	27-32	13-16	13-16	27-32
Sierra Nev	5¾	5⅝	4⅞	4⅞	4⅝	4⅝
Silver King						12
Tip Top			2			
Union Con	5⅞	5⅝	5¼	5	4⅞	5
Wales Con		¼	¼	¼	¼	3-16
Yellow Jacket	1¼	1⅛	1¼	1¼	1¼	1¼

Copper and Silver Stocks.

Reported by C. H. Smith, 15 Congress street, Boston, Stock Broker and Member of the Boston Mining and Stock Exchanges.

BOSTON, Nov. 16.

The market for mining stocks is fairly steady but dull. The amount of business transacted for the week would hardly be considered a good day's work in days gone by. The copper stocks, as a rule, have been well maintained, and prices show, with perhaps one exception, no material change. Calumet & Hecla sold at $250½@$251, and is in fair demand at these prices. The October product is reported to be 1655½ tons. Franklin declined from $14½@$13½ on a small lot, but was firmer to-day at $13¾. Pewabic advanced from $6¼@$7½ early in the week; later, it has been in demand, and sold at $11, assessment ($2) paid, and closed at $11 bid, $12 asked. The dealings in Quincy have been light, and show a decline from $68@$67¼. The Portage Lake *Mining Gazette* says: "The reported product of the Quincy in October foots up 400 tons 26 pounds, and the figures handed in for the ten months ended October 31st, show a yield of 2460 tons 425 pounds, against 2007 tons 725 pounds during the corresponding period in 1881. The yield of the mine for the two months ended last year was: November, 884 tons 1545 pounds; December, 514 tons 1215 pounds; making a total of 3407 tons 1485 pounds for the year. It will be seen that the Quincy, in order to equal its product of 1881, will have to get out in November and December 947 tons 1060 pounds. If the mine is as responsive during the two closing months this year as it was in November and December, 1881, the product of 1882 is going to exceed that of last year." Osceola declined from $34@$33¾. Huron was in better demand, and advanced from $2¼@$2⅝. National declined from $1½@$1¾. Allouez sold at $2½, and declined to $2⅛. The October product of the mine was 90¼ tons. It is reported that an assessment on the stock of the company is likely to be levied very soon. In order to bring the output of the property up to a dividend-paying basis, the development-work must be increased, and to do this more money will be needed. The assessment, if made, will not

NON-DIVIDEND PAYING MINES.

NAME AND LOCATION OF COMPANY.		NUMBER OF SHARES.	Par.	ASSESSMENTS. Total levied to date.	ASSESSMENTS. Date and amount of last.		HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE. Nov. 11. H.	Nov. 11. L.	Nov. 13. H.	Nov. 13. L.	Nov. 14. H.	Nov. 14. L.	Nov. 15. H.	Nov. 15. L.	Nov. 16. H.	Nov. 16. L.	Nov. 17. H.	Nov. 17. L.
Advance							30c		29c		29c		30c				90c	
Albion, S. L.	Nev.	150,000	100	397,500	Jun. 82	25			3.30				4.00					
Allouez	Mich																	
Alpha	Nev.			420,000	Mar. 82	50												
Alta	Nev.	100,800	100	1,641,600	May 82	50												
Alta-Montana, G.	Mon.	500,000	10	*					17c	16c			15c		15c	12c	13c	12c
Am. Flag, S	Colo	125,000	10	300,000	Jun. 77	25	3c											
Barcelona, G.	Nev	200,000	25	*			8c		7c		7c						6c	
Battle Creek																		
Bear Creek	Cal.	300,000	1				27c	26c	29c	25c			26c					
Beauce																		
Bechtel Con., G	Cal.	100,000	100	175,000	Nov. 82	10					2c						2c	
Best & B'cher, G. S	Nev.	100,800	100	1,295,300	Jul. 82	50			5.25									
Big Pittsburg, S. L	Colo	200,000	100	*														
Black Jack, G	Cal.	100,000	2½															
Bonanza Chief	Mon	1,000,000	1	*			3c											
Bondholder	Colo	200,000	2½															
Boston Con., G	Cal.	100,000	100	95,000	Oct. 82	25												
Boulder Con																		
Bradshaw, S	Ariz	225,000	10				46c	44c			47c	45c	47c	45c	47c	45c	45c	44c
Buckeye	Colo	400,000	5	*							34c	30c						
" pref											4c							
Bull-Domingo, S L	Colo	200,000	50	*														
Bullion, G. S	Nev.	100,000	100	3,747,000	Oct. 82	50												
Bye and Bye	Ariz	100,000	10	*														
Calaveras, G	Cal.	500,000	1	*			5c		5c									
C'lav'r'a W. & M. Co	Cal.																	
Cal., B. H., G	Dak.	100,000	100	480,000	Au. 82	15					1.85							
Carbonate Hill, S L	Colo	200,000	10														83c	
Catskill, S	Nev.	300,000	5															
Central Ariz'na, S	Ariz	100,000	100						55c	50c	51c	50c	55c	50c	54c	50c	52c	50c
Chapparal	Cal.																	
Cherokee, G	Cal.	150,000	10				12c		11c	9c	9c		9c					
Chollar					Sep. 82	50												
Clarence	Can.																	
Colorado Cent'l, S	Colo	300,000	10															
Col'mb'a Con., G. S	Nev.	100,000	50															
Cons. Imp'ri'l, G. S	Nev.	500,000	100	1,425,000	Jan. 82	10												
Con. Pacific, G	Cal.	60,000	100	141,000	Au. 82	25												
Crescent, S L	Colo	300,000	10	*														
Crowell, G	N. C.	50 ,000	1															
Dahlonega, G	Ga.	250,000	1	*														
Dardanelles, G	Cal.	100,000	10															
Decatur							23c	8c	12c	6c	11c	6c	8c	7c	10c	8c	10c	7c
Dunderberg, S	Colo	150,000	10	*														
Durango, G	Dak.	500,000	1	*													9c	
Eastern Oregon																		
Empire, S	Ut'h	100,000	100															
Enterprise	Colo						60c		60c		60c		60c	59c	60c		60c	
Exchequer	Nev.	100,000	100	630,000	Jan. 82	25												
Globe Copper	Ariz.																	
Gold Placer, G	Colo	200,000	25	*													14c	
Goodshaw, G	Cal.	100,000	100	200,000	Oct. 82	10												
Granville, G	N. C.	300,000	1	*														
Harshaw, S	Ariz	100,000	100															
Head Center, S	Ariz	100,000	100	160,000	May 82	20												
Hortense, S	Colo	200,000	10															
Index	Cal.																	
Julia, G S	Nev.	110,000	100	1,594,000	Jan. 82	20												
Kossuth, G S	Nev.	108,000	100	421,200	Aug. 77	15												
Lacrosse, G	Colo	100,000	10	*			16c		17c	16c			16c				17c	16c
Leviathan, S	Nev	100,000	100	380,000	Sep. 82	25												
Lucerne, S	Colo	500,000	10	*														
Mariposa Pref., G	Cal.	50,000	100	1,687,500	Dec. 81													
" Com., G	Cal.	100,000	100	1,950,000	Feb. 82													
May Belle, G	Cal.	100,000	100	84,000	Dec. 81	20												
Mayflower, S	Colo	100,000	100															
Mexican, G. S	Nev.	100,800	100	2,146,800	Oct. 82	$1	4.35		4.63		4.50		4.38		4.25	4.00		
Michoacan Synd.	Mex.																	
Miner Boy, G S L	Colo	500,000	10	*														
Miller	Nev.	200,000	25															
Mono, G	Cal.	50,000	100	525,000	Oct. 82	25												
Moose Silver, S	Colo	300,000	10															
Nevada Syndi.																		
North Standard, G	Cal.	100,000	100	20,000	Nov. 81	10											20c	
N. Horn-Silv'r, S L	Utah	400,000																
Noonday	Cal.	60,000	10	148,000	Sep. 82	25												
Old Dominion, C	Ariz	200,000	100	*														
Oriental	Nev.	200,000	10															
Orl'nt'l & Miller, S	Nev.	400,000	25				13c	12c	13c		13c	11c	13c		13c		13c	
Overman, G S	Nev.	115,200	25	3,604,700	May 82	25												
Potosi	Nev.	112,000	100	476,000	Sep. 82	25												
Quartz Creek			100						7c		7c		5c				5c	
Rappahannock, G	Va.	250,000		*					11c		11c				11c		3c	
Red Elephant, S	Colo	500,000	1	*														
Retort			10															
San Pedro, G S L	N. M	400,000																
Silver Cliff, S L	Colo	200,000	25	*			65c	62c	62c	58c	58c	51c	50c	41c	41c	38c	37c	34c
Silver Islet	Can.		50															
Sonora Con.	Mex.																	
South Bodie, G	Cal.	100,000		100,000	Mar. 82	15												
South Bulwer, G	Cal.	100,000	100	195,000	May 81	25												
South Hite	Cal.	100,000	100		May 82	10	30c		30c				27c		25c		25c	
South Pacific	Cal.		5				12c		12c		13c		13c	12c	12c	11c	12c	11c
State Line No. 1, S	Nev.	200,000	1															
" No. 2, S	Nev.	200,000	25															
" No. 3, S	Nev.	200,000	25															
" No. 4, S	Nev.	200,000	25															
" Nos. 1 & 4, S	Nev.		25				4c	2c	5c		4c						3c	
" Nos. 2 & 3, S	Nev.						12c	10c	12c				11c		11c			
Sutro Tunnel	Nev.	2,000,000		*			29c		29c	25c	29c	28c	29c	28c	29c	28c	29c	28c
Taylor-Plumas			10				14c	13c	15c	14c	15c	14c	15c	14c	14c		14c	13c
Tioga, G	Cal.	100,000		285,000	Oct. 82	10												
Tuscarora, S	Nev.	100,000	100	110,000	Oct. 81	15	7c		7c		7c		7c					
Unadilla, S	Colo	500,000	100	*											5.13		5.00	
Union Cons., G. S.	Nev.	100,000	1	1,480,000	Oct. 82	$1	5.50	5.25										
Utah	Nev.	20,000	100	1,340,000	Oct. 82	$1												
Vandewater, S	Nev.	200,000	100	*														
Washington, S	Ariz.	200,000	10				14c	13c	13c	11c	10c	9c			14c	13c	14c	13c
Whalen Copper	Nev.	100,000	25				22⅞	22.50	22.75		22.75	22⅝	23.00				23.00	
Wide West																		
Willshire, G	Cal.	50,000	5	*														

* Non-assessable.

SALES.—Advance, 2000 ; Albion, 600 ; Alta-Montana, 3800 ; American Flag, 300 ; Barcelona, 3500 ; Bear Creek, 800 ; Bechtel Consolidated, 2700 ; Best & Belcher, 100 ; Bonanza Chief, 1000 ; Bradshaw, 8200 ; Buckeye, preferred, 400 ; Bull-Domingo, 100 ; Calaveras, 3300 ; Cafedonia, B. H., 200 ; Carbonate Hill, 500 ; Central Arizona, 2100 ; Cherokee, 1500 ; Decatur, 164,200 ; Durango, 400 ; Enterprise, 6800 ; Gold Placer, 100 ; Lacrosse, 3300 ; Mexican, 730 ; North Standard, 200 ; Oriental & Miller, 10,150 ; Quartz Creek, 2100 ; Rappahannock, 4000 ; Red Elephant, 100 ; Silver Cliff, 15,600 ; South Hite, new, 2700 ; South Pacific, 19,900 ; State Line, Nos. 1 & 4, 4800 ; State Line, Nos. 2 & 3, 5150 ; Sutro Tunnel, 11,500 ; Taylor-Plumas, 31,600 ; Tuscarora, 4500 ; Union Consolidated, 300 ; Washington. 8200 ; W alen Copper Company, 140. Non-dividend shares sold, 327,570. Total shares sold at all the Exchanges, 497,$_{h}$62.

be less than $1 per share. The remainder of the copper list is entirely neglected.

The silver stocks have been very quiet and the transactions light. Bonanza Development declined from $3⅛@$3 5-16. Catalpa, on the announcement that a dividend of ten cents per share was coming, advanced from $1.22½@$1.27½, but subsequently declined to $1.20. Crescent also declined from 45@40c. Harshaw sold at $1¼@$1⅜ in the early part of the week, but was freely offered to-day at $1, and the best bid was 37½c. This stock sold at one time as high as $47 per share, and has proved any thing but a bonanza to the investors. Sullivan declined from $1⅜@$1⅛, and closes at $1 bid.

At the Boston Mining and Stock Exchange, there has been a fair degree of activity, but no special feature. The orders for mining stocks are few and far between ; but there is a growing business in railroad and miscellaneous stocks, which augurs well for the future of the Exchange.

3 P.M.—Prices were inclined to be lower this afternoon, and there is no vim to the market. Calumet & Hecla declined to $250. Franklin, to $13½. Catalpa, to $1.17½. Pewable sold at $11 for round lots, and $11¼ for a ten-share lot. Allouez, $2½ bid. Huron, $2½@$2⅝. Quincy, $67 bid. National sold at $1⅛, and closed $1⅜ bid. Osceola, $33¼ bid. Bonanza, $3¼ bid. Harshaw, $⅝ bid. Sullivan, $1 bid. Silver Islet offered at $11.

BULLION MARKET.

NEW YORK, Friday Evening, Nov. 17.

The market abroad and here has been steady, but rather nominal, at even figures since our previous report.

DATE.	London Pence.	N. Y. Cents.	DATE.	London Pence.	N. Y. Cents.
Nov. 11	51 5-16	111⅝	Nov. 15	51 5-16	111⅝
Nov. 13	"	"	Nov. 16	"	"
Nov. 14	"	*	Nov. 17	"	"

* 111⅝@111¾.

BULLION PRODUCTION FOR 1882.

We give below a statement showing the latest bullion shipments. These are officially obtained from the companies, where that is possible ; and where official statements can not be procured, we take the latest shipments published in those papers nearest to the mines reported. The table gives the amount shipped for the week up to the date given, as well as the aggregate shipments to such date from the first of January, 1882.

The shipments of silver bullion are valued at $1.29·29 per ounce troy ; gold at the standard $20.67 per ounce troy. The actual value of the silver in the following table is therefore subject to a discount, depending on the market price of silver. If the price of silver be counted at $1.12 per ounce, which has for some months been about its average value, the following figures, where they relate to silver bullion, should be diminished by about 13½ per cent to arrive at actual value.

MINES.	States.	For the week.	Month of October.	Year from Jan. 1st, 1882.
*Alice, G. S	Mont.			$644,293
*Alta-Montana, G. S. L.	"		$39,294	343,290
Barbee & Walker, S	Utah		13,941	77,967
*Belmont	Mont.			24,555
Betty O'Neal, S	Nev.			59,159
*Black Bear, G	Cal.			69,015
Bodie, G. S	"	$10,168	41,330	360,131
*Boston & Montana, G.	Mont.		31,240	240,190
*Caledonia, G	Dak.			76,655
*Caribou, S	Colo.			126,918
*Central Arizona, S	Ariz.		21,506	161,660
*Christy, S	Utah			254,888
*Chrysolite, S. L.	Colo.		6,780	285,688
Cons. Bobtail, G.	"			99,784
*Contention, S	Ariz		139,328	1,550,377
Crismon-Mammoth, G.	Utah			63,579
*Custer, G. S	Idaho		23,359	642,617
*Deadwood-Terra, G.	Dak.		59,571	551,052
*Derbec Blue Grav., G	Cal			115,370
*Eureka Con., G. S. L.	Nev.		35,090	796,928
Evening Star, S. L.	Colo.			862,521
*Father de Smet, G	Dak.		28,674	310,310
*Frisco M. & S. Co., S. L	Utah		47,126	318,599
Girard, S	Ariz.			90,964
Grand Central, S	"			905,000
*Hall-Anderson, G	N. S		4,732	12,033
*Head Center, S	Ariz.		63,000	130,609
*Homestake, G	Dak.		101,917	984,568
Horn-Silver, S. L	Utah	45,000	337,500	3,010,016
*Hope, S	Mont.		30,599	270,744
Idaho, G	Cal			395,540
*Independence	Nev.			87,838
*Indian Queen, S	"			138,697
*Inyo Cons., G	Cal		13,000	59,421
Ingersoll, S	Ariz.			90,000
Iron Silver, S	Colo.			865,436
*Jocuistita, S	Mex.			660,662
*Kentuck	Nev.			2,175
†Leeds, S	Utah			11,988
*Little Pittsburg, S. L.	Colo.		9,081	127,624
Manhattan, S	Nev.			64,300
Morning Star, S. L.	Colo.			478,626
Mount Diablo, S	Nev.			294,397
*Navajo, G. S	"			63,862
New York Hill, G	Cal		11,380	105,136
Noonday, G	"			67,818
North Noonday, G	"			83,456
Northern Belle, S	Nev.	7,667	82,479	670,724
‡Ontario, S. L.	Utah		117,800	2,052,842
Ophir, G. S	Nev.			39,472
*Oxford, G	N. S.		2,144	15,564
Pascoe, S	Utah			4,575
*Pleasant Valley, G. S.	Cal			31,938
Robert E. Lee, S	Colo.			292,550
Savage, S	Nev.			3,500
*Silver Bow, G. S	Mont.			236,100
Silver King, S	Ariz.			488,680
*Spring Valley, G	Cal.			152,000
Standard, G	"		41,855	114,585 969,370
Star, S	Nev.		2,311	5,200 55,651
Stormont, S	Utah		6,620	17,030 256,094
Syndicate, G	Cal		8,580	10,500 38,509
Tintic M. & M. Co	Utah			12,073 38,607
*Tip Top, S	Ariz.			191,034
*Tombstone, G. S.	"			590,286
Union Con., S	Nev.			217,623
Vizina, S	Ariz.			165,200
Total amount of shipments to date				$23,546,772

* Official. † Net. ‡ Assay value. *G. Gold. S. Silver. L. Lead.*

Exports and Imports of Gold and Silver at New York.

Exports.

Week ended November 11th	$52,500
Corresponding week last year	183,225
Since January 1st, 1882	44,614,271
Corresponding period last year	10,013,050

Imports.

Week ended November 11th	$299,538
Corresponding week last year	148,083
Since January 1st, 1882	5,028,179
Corresponding period last year	53,369,660

Foreign Bank Statements.—The governors of the Bank of England, at their regular weekly meeting, made no change in the bank's minimum rate for discount, and it remains

BOSTON MINING STOCKS.

	Nov. 9.		Nov. 10.		Nov. 11.		Nov. 13.		Nov. 14.		Nov. 15.		Sales.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Aliouez					2.50						2.12½		450
Atlantic													
Aztec													
Belle Isle	.57	.55			.53								400
Blue Hill			.50										500
Bodie Con							3.50						50
Bonanza D	3.50		3.37½		3.50		3.50	3.37½					400
Bruns. Ant													
Bulwer													
California	.25												200
Cal. & Hec	250		250¼		251		250½				251		44
Carbon. Hill													
Catalpa			1.25	1.20	1.25	1.22½	1.27½		1.27½	1.22½			3,520
Central Ariz													
Cherryfield									.25		.25		800
Chrysolite													
Con. V'ginia			.75										200
Copp'r Falls													
Crescent	.42½		.42½	.42	.42½		.42½	.40	.40		.41	.40	3,600
Cumberl'd													
Deer Isle													
Denver City													
Douglas											1.00		100
Duncan													
Dunkin													
Empire	.37	.35	.33	.30	.33	.32	.33		.34	.33	.34	.33	13,400
Franklin			14.25						13.50				60
Hancock G	5.37½		5.25				5.37½	5.25	5.37½		5.37½		1,200
Harshaw					1.25		1.37½						200
Huron	2.50	2.43¾	2.50	2.37½			2.37½		2.50		2.37½	2.50	1,645
Independ'ce													
Indian Q'n											1.50		300
Madison													
Mammoth											.03		1,000
Mass.& N.M.	.21		.21		.23	.21	.21		.21	.20	.20		10,300
Milton													
Napa					4.37½								100
National					1.50				1.37½		1.37½		400
North. Belle	12.58												25
Osceola	34.25				34.00				33.75	33.50			130
Penn-Breck													
Pewabic	6.25				7.50	7.00			11.50		11.50	11.00	540
Pine Tree	.16	.15							.20		.21	.20	3,000
Plymouth													
Pontiac													
Quincy	68.00	67.50	67.50				67.75				67.25		94
Ridge													
Robinson			1.41						1.40				300
San Pedro	.35		.33						.30				600
S'ra Nevada													
Silver Islet							5.30						50
So. Pacific	.12		.12				.12		.12		.12		2,100
Standard			5.20										50
Star Copper													
State Line Nos.2 & 3													
Stewart													
Sullivan	1.50		1.50	1.25	1.18¾		1.12½		1.12½		1.24¾	1.12½	3,768
Sutro Tun	.29												300
Sycamore	.35		.30										300
Twin Lead													
Vizina									.05		.05		2,500

PHILADELPHIA MINING STOCKS.

	Nov. 10.		Nov. 11.		Nov. 13.		Nov. 14.		Nov. 15.		Nov. 16.		Sales
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
American	.18		.18	.16	.17				.16		.16	.15	9,500
Argent													
Arizona So.													
Aztec													
Battle Mt	.03		.03								.03		14,000
Black Sul			.05		.05		.04						10,800
Buena	.04												
California													
Calista													
Cincinnati			.08						.14	.10	.15		9,800
Comprom'e	.45	.35	.42½		.40	.37½	.37½		.37½		.37½		10,300
Dauntless													
Del Monte					.12		.12						1,100
Denver City	.30	.24	.32½	.27½	.32½		.30				.30	.25	23,400
Fairview													
Eureka													
Girard			.19						.17		.16		8,200
Golconda													
Golden Age													
Governor	.08		.08		.08		.08	.07	.08	.07	.07		23,400
Grand Uni'n	.08		.08		.08		.08		.08				36,400
Gunnison	.65	.62½	.65						.60				425
Hancock													
Intervener													
Iowa Gulch	.09		.10		.09		.10	.09	.09		.10	.09	24,800
King Bul'on													
Ledger Con													
Little Dia'd													
Little Maud													
L'g & D'y Hl													
McCullough													
Magnolia													
Montana													
Mt. Lincoln													
Mt.Sheridan							.04				.04	.03	6,200
National													
Orion	.10						.11	.10					200
Palmetto E													
Pembina	.40	.20	27½	.25	.32½	.27½	.35		.35		.32½		14,400
Penn-Breck	.22										.20		600
Permanent													
Pizarro													
Pizarro Ex									.02				500
Potosi													
Rara Avis	.95		.92½		.9[illegible]	.85			.80	.77½	.85		1,700
Rara Avis E	.05				.04		.04				.04		9,000
Rico Pion'r													
San Pedro	.01		.01										2,500
Sierra G'ncle	4.10	4.05	4.10		4.25		4.25		4.10	4.05	4.20	4.10	8,700
Silver Cord													
Silv'r Plume													
Silver Rock													
Sovereign	.08		.08						.09		.09		12,300
Standard													
Sultana	.04				.04		.04						5,400
Sutro Tun'l			.30						.30				700
Tombstone	.92½	.90	.92½	.85	.95	.92½	.95	.92½	.95	.92½	.92½		14,224
Tranquilli'y											.50		200
Tyrone													
Union Con													
Victor			.01										5,000
Yale Mt					.42½		.60	.50	.60		.77½	.70	11,100

at 5 per cent. During the week, the bank gained £51,000 bullion, and the proportion of its reserve to its liabilities was raised from 37¼ to 38 13-16 per cent, against 39 3-16 per cent at the same date in 1881. November 16th, the bank gained £90,100 bullion on balance. The weekly statement of the Bank of France shows a specie loss of 965,000 francs gold, and 4,220,250 francs silver.

Bullion Receipts at New York.—The bullion received from the mines at the various offices in this city during the week ended November 17th, as compiled from various sources, amounted to $352,500 as against $176,000, reported for the previous week. The receipts from January 1st, 1882, to date, are $12,160,559.51.

METALS.

NEW YORK, Friday Evening, Nov. 17.

Copper.—In Lake copper little has been done. We learn, however, of a sale of 25,000 pounds at 18c., which proves that from second hands occasional lots are procurable at low figures. First hands still hold at 18¼c. We are reported sales of more than one million pounds of Western copper at a price supposed to range between 17⅝@17¼c. An important movement which has begun during the past two or three weeks is the shipment abroad of Western mattes, which formerly went to Eastern refiners, and the copper from which was placed on our market. The quantity is equal to exports of copper monthly of 600,000 pounds of copper, of which our market is relieved so long as Swansea prices continue better than those of our Eastern refiners. London cables to-day, £76 for Best Selected and £68 for Chili Bars.

Tin.—The market has been fairly active during the week, and there have been sales of spot Straits as low as 22¼c. spot. The market has since rallied and is now 22½c. for spot Straits, 22¼@22⅝c. for Australian, and 23¼c. for Lamb & Flag. London, which during the week went as high as £100 15s., has closed at £98 10s.

Lead.—The situation has not changed practically, and in the absence of any business it is impossible to give quotations. Some holders ask 4·80c. for Common and 4·85c. for Refined, while it is reported on the other hand that others are offering Refined at 4·75c. Buyers do not want to enter the market except to purchase jobbing lots to tide over urgent needs, and some of them are said to be in a position to hold out for months. England cables £14 5s. for English Common.

Spelter.—Owing to a very limited demand, this metal continues to droop, and some second-class brands can now be had for 5c. Good ordinary Domestic is obtainable for 5·10c., while Foreign is nominally held at 5¼@5⅝c. London cables £16 12s. 6d.

Antimony.—Supplies abroad are in excess and tend to a weaker market here. Cookson's is nominally quoted 12¾@12⅞c., and Hallett's 10¾@10½c.

Quicksilver.—The spot market is sluggish at 37½c.
—*San Francisco Commercial Herald.*

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Nov. 17.

The Iron and Metal Exchange, at 69 Wall street, has issued a circular giving Friday, November 24th, as the first of the special weekly meetings or 'Change days. The publication of weekly bulletins, containing foreign and domestic market reports, has also been begun as an experiment.

American Pig.—The market is quiet, but as yet remains firm, particularly in choice Foundry grades. Some brands are difficult to get, but still there are gathering signs, notably in Foundry No. 2 and mill irons, of a weakening which has not yet found expression in prices. We note the sale of a lot of Thomas No. 2X and 1X at $24 and $26 respectively. Our quotations remain $25.50@$27 for No. 1 Foundry, New York delivery; $23.50@$24.50 No. 2; and Gray Forge, $21.50@$22 here. Bessemer pig is dull and quiet at $23.50 nominally. England cables 56s. 6d.—Spiegeleisen is dull and weak at $27@$28 for 10 per cent, $30@$31 for 15 to 17 per cent, and $33@$36 for 20 per cent.

Scotch Pig.—The market is fairly steady, spot stocks being practically exhausted, while the demand is for early delivery. Sales are almost exclusively made to arrive. We note in lots 1000 tons this week. Freights remain 10@11s. There is, however, a perceptible tendency toward ease in the early future, the time of the heaviest demand for consumption having came to a close. We quote here: Coltness, $27.50@$28; Glengarnock and Carnbroe, $25@$25.50; Gartsherrie, $25.50@$26; and Eglinton, $23@$23.50. The cable quotations at the Iron and Metal Exchange, at 69 Wall street, today, are as follows: Carnbroe, 57s. 6d.; Gartsherrie, 64s. 3d.; Summerlee, 64s.; Coltness, 69s.; Langloan, 67s. 6d.; Glengarnock, 67s. 6d.; and Eglinton, 52s., the latter two at Ardrossan. Warrants are 49s. 10½d.

Rails.—Steel rails are the subject of much discussion and comment this week, a further notable decline having taken place. We hear that there have been sales here as low as $40, and in the West as low as $42, the quantities aggregating 15,000 to 20,000 tons. One by one, the mills are beginning to reduce their output by reason of lack of orders. In October, the eleven mills belonging to the Bessemer Association were making rails at the rate of 2,000,000 tons per annum, exclusive of the "outside" mills, of which three make rails, and those which roll imported blooms. We can not quote rails higher than $41@$43, and the indications are, that this price could be shaded. England cables £5@£5 5s.

Old Rails.—No new business is reported, and old material continues scarce. We quote Ts nominally at $27@$27.50; and D. Hs., $30@$31.

Scrap.—There has been no business. For No. 1 Wrought ex ship, we quote $27@$27.50.

Philadelphia. Nov. 17.

Generally speaking, crude iron is firm and finished iron is weak throughout Pennsylvania. Business is falling off temporarily. Complaint is made of dullness, though this is the season when a slacking up of demand is to be expected. Business this week in crude iron has been more restricted than for a long time. No very heavy single transactions were heard of. A large number of inquiries were made; but as buyers are looking for lower prices than makers are willing to concede, transactions are restricted to small amounts and for early delivery. There is an undertone of confidence, however, that after the present uncertainties are removed, a large amount of business will be done at satisfactory quotations. The trade will likely creep along until the end of December with a hand-to-mouth policy, in order to see as far ahead as possible and be in a position to take advantage of developments. Makers of Foundry iron are holding on to the outside prices for standard brands, and buyers are purchasing in the usual cau-

tious way. The average business is done at $26 upward. A thousand tons have been sold at that figure to 50c. lower. No. 2 is fluctuating between $23.50@$25. Sales of a few hundred lots have been heard of at about $24. It is still correct to say that standard brands are scarce, but the scarcity is not of the same character as a few weeks ago. There are no stocks on hand; but leading furnace companies would prefer to let stocks accumulate, rather than quote lower. Gray Forge is moving slowly at $20.50 @$22, with a like scarcity for prompt delivery. English and Scotch iron is quiet, and little is to be reported. It is probable that if quotations were lower, some large business could be done. Bessemer iron is dull at $23.50, and as soon as importers can furnish stock at $23 for shipment, it is likely that some good-sized orders will be placed.

Muck bars are easier, and about 500 tons are reported at from $40.50@$41.50. There is less going on.

Blooms.—Quotations for Charcoal Blooms are $68@$70, and for Anthracite, $58@$60, with a quiet market.

Merchant Bar.—Western parties are contributing to the unsettled state of affairs in the eastern end of the State, by offering stocks of iron at 2·20@2·25c. at Pittsburg, which, with freights, puts iron delivered in Middle and Eastern Pennsylvania at from 2·35@2·40c. Several negotiations have been suddenly arrested by these offers; one for as much as 1000 tons of Bar. The market has a downward tendency, and buyers are holding off to see what they can get out of the West. The card rate is 2·6c., but even the best iron here is not bringing that figure. A number of small orders were placed at 2·55c., and some at 2·50c. Orders would not be refused at 2·45c., as the Eastern manufacturers and brokers are determined to beat the Western cutting.

Nails are in fair demand at card rates, with a downward tendency for later deliveries. Scrap-iron is fairly active at last week's figures.

Structural Iron.—A number of inquiries have come to hand, and quotations are given at 2·9@3c. for Angles; 3·34c. for Tees; 4c. for Beams; and 4·2c. for Channels. Manufacturers report a good demand for Bridge Plate, but buyers of large lots are more anxious for concessions than a few weeks ago.

Plate and Tank.—The downward tendency noted a week or two ago is well maintained, and buyers have been drawn out of the market for better prices. Tank is quoted at 3c., but can be bought at less; Shell. 4c., but this can be shaded; Flange, 5c.; Firebox, 6c. No large orders have been heard of, but buyers are ready to place heavy contracts as soon as they see bottom prices. There is a feeling of confidence in the market, notwithstanding the apparent weakness, as the average consumptive demands are heavy. It is known that a large amount of car-work will be placed during the early winter, and the providing of iron for these requirements will give a fair demand.

Hardware.—Hardware houses are doing a somewhat better business in winter goods, and stocks are ample for all probable requirements.

Steel Rails.—Quotations are given at $44@$45, for regular business in small lots. Nothing is said about inside quotations, as buyers are not in the market. Those who keep track of the probable requirements of consumers speak with some confidence of the demand which will be presented early in the new year. Blooms are nominally $35@$36.

Old Rails.—Tees are very scarce, and in the absence of transactions for large lots, quotations are given at $27.50@$28; American, $29; Double-Heads, $30.

Scrap-Iron.—The market is quiet, and selected lots are commanding $29@$30, but the downward tendency in finished iron is checking demand for every thing but small lots. Medium Scrap is held at $27@$28. Other kinds, unchanged.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Nov. 17.

Anthracite.

The local coal trade is quiet, and there is an ample supply of all sizes of anthracite except stove and chestnut. These command a little better price than the quotations of the September circular, which still remains practically in force. The advent of cooler weather is looked forward to with some impatience.

Coal, in a recent issue, says:

The year thus far has been a very satisfactory one for the companies, the bulk of the coal sold by them being at gradually improved prices. The general average for all grades of coal is certainly in most cases over $4.

The other great distributing centers show a falling off in receipts; at Chicago, the figures for October having been 43,884 tons by rail and 76,731 tons by lake. The total receipts from May 1st to November 1st have been 799,808 tons, against 720,272 during the same period last year. Boston stands this year 1,591,980 tons to the 11th, against 1,396,588 tons last year.

According to Mr. Jones's official statement, the aggregate coal tonnage of the various carrying companies during October was 2,945,037 tons, being an increase of 258,983 tons as compared with the corresponding month of last year. The total tonnage of all the companies for the year to October 31st was 23,723,283 tons, an increase of 675,866 tons as compared with the corresponding period of last year. The stock of coal on hand at tide-water shipping points October 31st was 524,050 tons, an increase of 10,116 tons during the month.

The production of anthracite for the week ended November 11th was 669,867 tons, as compared with 588,584 tons the previous week, and 635,472 tons for the corresponding week of 1881. The total product from January 1st to November 11th was 24,965,258 tons, as against 24,176,670 tons for the like period of last year, showing an increase this year of 788,588 tons.

Bituminous.

The only item of interest this week is the rumor that there is a prospect of an early settlement of the pending troubles between the Pennsylvania Railroad and some of the Clearfield shippers in regard to the rates on contracts. Until now, of course, they have been practically out of the market, and are buying occasional lots of coal from Cumberland operators. The demand continues good for the supply, and we quote unchanged, $4.75@$4.85 for Cumberland, and $4.85@$5, nominally, for Clearfield coal.

STATISTICS OF COAL PRODUCTION.

Comparative statement of the production of anthracite coal for the week ended November 11th, and years from January 1st:

TONS OF 2240 LBS.	1882.		1881.	
	Week.	Year.	Week.	Year.
Wyoming Region.				
D. & H. Canal Co..	84,835	3,067,908	86,049	3,099,829
D. L. & W. RR. Co.	96,486	3,945,320	95,154	3,689,082
Penna. Coal Co.....	36,562	1,222,917	36,653	1,220,231
L. V. RR. Co.....	15,795	926,011	18,751	977,776
P. & N. Y. RR. Co..	4,029	165,508	3,361	88,278
C. RR. of N. J.....	48,755	1,084,345	51,663	1,994,166
Penna. Canal Co...	16,005	453,803	....	403,630
	302,467	11,765,812	291,631	11,472,992
Lehigh Region.				
L. V. RR. Co.....	116,657	4,187,951	112,911	3,888,396
C. RR. of N. J.....	52,493	1,940,014	53,836	1,883,782
S. H. & W. B. RR..	1,173	45,528	....	10,426
	170,323	6,173,493	166,747	5,782,604
Schuylkill Region.				
P. & R. RR. Co	170,520	5,877,348	164,949	5,994,051
Shamokin & Lykens Val.....	24,723	1,094,591	10,565	871,360
	195,243	6,971,939	175,514	6,865,411
Sullivan Region.				
St Line&Sul.RR.Co.	1,834	54,014	1,580	55,663
Total	669,867	24,965,258	635,472	24,176,670
Increase.....	34,395	788,588	.....	.....
Decrease	.....	.....	.....	.....

The above table does not include the amount of coal consumed and sold at the mines, which is about six per cent. of the whole production.

Total same time in 1877.....17,290,515 tons.
" " " " 1878.....14,799,919 "
" " " " 1879.....22,735,002 "
" " " " 1880.....20,089,788 "

The decrease in shipments of Cumberland Coal over the Cumberland Branch and Cumberland & Pennsylvania railroads amounts to 853,884 tons, as compared with the corresponding period in 1881.

Belvidere-Delaware Railroad Report for the week ended November 11th:

	Week.	Year. 1882.	Year. 1881.
Coal for shipment at Coal Port (Trenton)	3,590	84,053	65,686
Coal for shipment at South Amboy.....	18,115	709,570	619,713
Coal for distribution.....	16,844	623,491	599,445
Coal for company's use	2,295	110,129	95,708
Total	40,844	1,527,243	1,380,552
Increase...	.....	146,691	.....
Decrease.....	.....	.....	.....

The Production of Bituminous Coal for the week ended November 11th was as follows:

Tons of 2000 lbs., unless otherwise designated.

	Week. Tons.	Year. Tons
Cumberland Region, Md.		
Tons of 2240 lbs..... . .52,606		1,111,690
Barclay Region, Pa.		
Barclay RR., tons of 2240 lbs.	7,165	344,366
Broad Top Region, Pa.		
Huntingdon & Broad Top RR....	3.681	242,403
East Broad Top.....	2,109	78,714
Clearfield Region, Pa.		
Snow Shoe.....	5,737	199.235
Tyrone and Clearfield..... 64,581		2,409,630
Alleghany Region, Pa.		
Pennsylvania RR...	7,793	467,025
Pittsburg Region, Pa.		
West Penn RR.....	7,503	301,005
Southwest Penn. RR.....	2,607	93,284
Penn & Westmoreland gas-coal, Pa. RR.....	22,804	1,085,588
Pennsylvania RR..... 13,514		567,094
Total.... 190,100		6,906.03$_4$

FREIGHTS.

Coastwise Freights.

Per ton of 2240 lbs.

Representing the latest actual charters to Nov. 13th, 1882.

PORTS.	From Philadelphia.	From Baltimore.	From Elizabethport, Port Johnston, South Amboy, Hoboken, and Weehawken.
Alexandria.....	.70@.75	.....	.....
Annapolis..... ...	.....	.....	.....
Albany.....	.....	....	.45@.50
Baltimore	.50§	....	.....
Bangor.....	.....	2.25	.....
Bath, Me.....	1.50	2.15	1.25
Beverly....	1.50	....	1.25
Boston, Mass.....	1.50@1.75	2.10	1.15@1.25
Bristol.....	1.35@1.40	1.75	.....
Bridgeport, Conn.	.....	1.65	.70
Brooklyn	.85§	1.45	.20H. .25§
Cambridge, Mass.	1.50@1.80	2.25	.....
Cambridgeport..	1.50@1.80	.....	1.25
Charleston, S. C..	.75@.80	.80	.....
Charlestown.....	1.60	2.10	1.15@1.25
Chelsea....	1.55	2.10	1.25
City Point.....	.....	1.00	.....
Com. Pt., Mass...	1.70	2.25	1.15@1 25
E. Boston.....	1.60	2.10	1.15@1.25
East Cambridge	1.75	2.25	....
E.Gr'nwich, R. I.	1.45	1.75	....
Fall River.....	1.35@1.50	1.70	.90@1.00
Galveston.....	4.00	3.25	... .
Georgetown, D.C.	.70@.75	.90	.....
Gloucester.....	1.60	2.25	.....
Hartford.... ...	.....	1.80	.....
Hackensack.....	.....	....	....
Hudson..... ...	1.00§	.....	.....
Lynn	1.75	2.30	1.35
Marblehead	1.60	2.40	1.30
Medford	.....	.....	.....
Millville, N. J...	.....	.....	.....
Milton.....	.....	.....	.....
Newark, N. J.....	.....	.....	... .
New Bedford	1.35@1.50	1.75	. .....
Newburyport	1.80	2.25	... .
New Haven.....	..... .	1.65	.70
New London.....	.....	1.65	.80
Newbern..... .	..... .	1.90	.....
Newport.....	1.50	1.75	1.00
New York.....	.85§	1.50	....
Norfolk, Va	.80	.80	.....
Norwich..... ...	.....	1.80	.80@.85
Norwalk, Conn ..	.....	1.80	. .....
Pawtucket.....	1.55†	.....	....
Philadelphia.....	.....	.....	....
Portland.....	1.50@1.35*	2.10	1.00*
Portsmouth, Va..	.80	.80	.....
Portsmouth, N.H.	1.75	2.25	1.35
Providence.....	1.40@1 50	1.65	1.00
Quincy Point.....	1.75†	.....	....
Richmond, Va...	.90@1.00	1.10	.....
Rockland, Me.....	.....	2.10	1.25
Rockport	1.85	2.15	....
Roxbury, Mass...	1.50@1.70‡	2.15	.....
Saco.....	1.75†	2.30	....
Sag Harbor.....	.....	.....	1.00
Salem, Mass.....	1.75	2.20	1.30
Saugus	.....	.....	.....
Savannah.....	.95@1.00	1.25	....
Somerset.....	1.40	1.70	1.00
Staten Island.....	.....	.....	.....
Trenton.....	.40§	.....	.....
Troy.....	1.00§	....	.....
Wareham..... ..	.....	.....	.....
Washington.....	.70@.75	1.00	....
Weymouth..... ..	.....	2.10	.....
Williamsbg, N.Y.	.85	1.50	.25
Wilmington, Del.	.....	.....	....
Wilmington, N.C.	....	1.40	... .

* And discharging. † And discharging and towing. ‡3c. per bridge extra. § Alongside. ‖ And towing up and down. ** And towing. ** Below bridge. †† Towing and pilotage, $75. H Hoboken

Boston rates off five cents per ton; other ports, freights firm and slightly advanced since our last. Scarcity of tonnage. Orders ample.

BALTIMORE, Nov. 30. GEORGE W. JONES & Co.

Horsford's Acid Phosphate

In Inebriety.

DR. C. S. ELLIS, Wabash, Ind., says: "I prescribed it for a man who had used intoxicants to excess for fifteen years, but during the last two years has entirely abstained. He thinks the Acid Phosphate is of much benefit to him."